ALLENSWORTH COMMUNITY SERVICES DISTRICT

TEST WATER WELL

ENGINEERING REPORT

January 2018

DEE JASPAR & ASSOCIATES, INC.
CONSULTING CIVIL ENGINEERS
2730 UNICORN ROAD, BLDG. A
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ACSD TEST WATER WELL

Attachments:

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ENGINEERING REPORT

PREPARED FOR: Board of Directors
Allensworth Community Services District
3336 Road 84
Allensworth, CA 93219

PREPARED BY: Curtis M. Skaggs, P.E.
Dee Jaspar and Associates, Inc.
2730 Unicorn Road, Bldg A
Bakersfield, CA 93308

DATE: February 6, 2018

SUBJECT: **Allensworth Community Services District**
Drilling of a Casing Hammer Test Well

INTRODUCTION

The Allensworth Community Services District (ACSD) contracted with Cascade Drilling, LP (Cascade) to construct a casing hammer test well. This letter summarizes the test well construction, water quality, and recommendations.

The test well is located on APN 333-252-020 approximately 2.5 miles east of Hwy 43 in Section 13, T.24S., R.24E., M.D.B.&M. in the City of Allensworth and is approximately 575-ft east of the existing ACSD Well No. 1.

The test well was drilled and constructed between January 8, 2018 and January 31, 2018.

DRILLING

Cascade began by hand augering a 16-inch diameter well hole to approximately 8-inches below ground surface using small shovels and hand trowels under the supervision of the project biologist as outlined in the Mitigated Negative Declaration. The project biologist was on-site full-time from mobilization, test well drilling, and demobilization to ensure compliance with the Mitigated Negative Declaration.

An 8-inch diameter casing hammer test well was drilled to a depth of approximately 439-feet below ground surface for purposes of finding water producing formations and testing water quality. Composite soil samples were collected across 10-ft intervals during the test well drilling

for visual description of the formation in the field. All samples were logged visually in the field under the direction of a California Professional Geologist in accordance with the Unified Soil Classification System. A detailed lithologic log is provided in Appendix A.

The Corcoran Clay was encountered at an approximate depth of 377-ft to 437-ft.

As the test well was drilled Cascade Drilling pushed an 8-inch steel casing pipe behind the drill bit. The casing pipe was landed in a clay formation when encountered and the hole drilled below the casing pipe into water producing formations. Cascade then airlifted the water for approximately 15 minutes and then installed a submersible pump. Cascade pumped each water sample for approximately 2 hours and then collected water quality samples.

Water producing formations were identified at the following depths and selected for water quality zone testing:

Zone 1: 97’ to 135’
Zone 2: 196’ to 228’
Zone 3: 237’ to 248’
Zone 4: 296’ to 307’
Zone 5: 337’ to 350’
Zone 6: 437’ to 439’

ZONE TESTING

A total of six zone tests were constructed at the depths noted above and water quality data obtained for each zone. A water quality summary is provided below in Table 1.

Table 1
Zone Testing – Water Quality Summary

Zone	Flow	TDS	EC	pH	GA	As	NO_3	Fe	Mn
1	25 gpm	460	681	7.8	11.1	3.0	22.4	<30.0	3.1
2	41 gpm	220	275	8.1	4.6	8.0	6.0	<30.0	6.0
3	40 gpm	150	230	8.2	2.8	18.0	7.0	<30.0	6.2
4	16 gpm	150	216	6.2	1.3	32.0	<0.4	<30.0	20.5
5	8 gpm	160	234	7.0	5.9	160.0	<0.4	<30.0	14.5
6	35 gpm	230	229	8.8	4.7	91.0	0.6	40.0	11.3

Flow = Pumping Rate for that particular zone.
TDS = Total Dissolved Solids
EC = Electrical Conductivity in umhos/cm
GA = Gross Alpha in pCi/L
As = Arsenic in ppb
NO_3 = Nitrate in ppm as Nitrate
Fe = Iron in ppb
Mn = Manganese in ppb

DBCP, EDB, and 1,2,3-TCP were below the detectable limits in all zones. Hexavalent Chromium ranged from about 3 ppb to 5 ppb which is below the proposed MCL of 10 ppb. Please refer to Appendix B for details on water quality data.

The gross alpha ranged from 3 to 11 picocuries per liter which is below the MCL of 15 picocuries per liter. The Nitrate concentration ranged from 0.6 ppm to 22.4 ppm which is below the MCL of 45 ppm as Nitrate. Iron and Manganese concentrations in all samples were less than the respective MCL's of 300 ppb and 50 ppb.

Arsenic was the primary constituent of concern and was present in all samples. The Arsenic was above the MCL of 10 ppb in all samples below a depth of 237-ft. The Arsenic ranged from 3 ppb to 8 ppb in samples above 228-ft.

WELL RECOMMENDATION

The proposed production well design is based on the water quality zone testing and the lithologic log in an effort to maximize yield and produce the best blended discharge water quality possible. Sieve analyses by Roscoe Moss for two fine sand samples recommend a slot size of 0.06 inch for the perforated interval and an 8x16 gravel gradation.

It is recommended to construct a well at the site that is perforated from 110-ft to 215-ft. Blank casing would be installed from ground surface to 110-ft and from 215-ft to 225-ft below ground surface. The gravel feed tube would be installed from ground surface to 90-ft and the sounding tube from ground surface to 105-ft below ground surface. The gravel pack would be installed from 225-ft up to 85-ft below ground surface and then a cement annular seal from that depth up to ground surface.

See the attached well casing diagram in Appendix C.

It is estimated that a properly constructed well as described above would produce approximately 500 gpm.

CONCLUSION

A hydrogeologic summary from Ken Schmidt & Associates, Inc. is attached in Appendix D. Cascade destroyed the test well by filling with cement slurry from the bottom of the well up to 6-ft below ground surface in accordance with the County of Tulare standards. The area was then backfilled and compacted to natural grade and the project area cleaned up and restored to its original conditions. All site work, soils disposal, and water disposal was performed in accordance with the Contract Documents and under the oversight of the project biologist. A Well Completion Report for the Test Well and a Well Completion Report for the Test Well Destruction are attached in Appendix E.

The environmental aspect of drilling a municipal well in this location is going to be a major obstacle and will need to be prepared for. It is recommended that BNLL surveys be performed at the appropriate times and efforts made to isolate areas that are clear from the migration of habitat into those areas. In addition meetings with CDFW and the project biologist are recommended to develop guidelines for drilling and construction that will be acceptable to CDFW.

APPENDIX A

TEST WELL
LITHOLOGIC LOG

GEOLOGIC LOG FOR ALLENSWORTH CSD
TEST WELL NO. 1
(T24S/R24E-13B)

Depth (feet)	Description
0-60	Brown silty and clay
60-70	Brown medium sand with gravel
70-80	Brown clay and gravel with coarse sand
80-135	Brown gravel with coarse sand
135-136	Brown clay
136-150	Brown gravel with coarse sand
150-160	Brown clay
160-205	Brown clay with some coarse sand and gravel
205-210	Brown fine sand
210-220	Brown coarse sand and gravel
220-228	Brown coarse sand
228-230	Brown clay
230-248	Brown fine sand
248-257	Brown clay
257-263	Gray-brown coarse sand and gravel
263-265	Gray-brown clay
265-276	Gray-brown clayey fine to coarse sand with gravel
276-280	Gray-brown clay with some coarse sand and gravel
280-302	Gray-brown clay
302-310	Gray clay
310-320	Gray fine to coarse sand with gravel
320-325	Gray medium to coarse sand with gravel
325-327	Gray clay
327-340	Dark gray fine to medium sand with clay
340-352	Dark purple-gray clay with fine to medium sand
352-360	Purple-gray clay
360-376	Brown-gray clay
376-377	Brown-gray clay with coarse sand
377-400	Gray clay (Corcoran Clay)
400-437	Black clay (Corcoran Clay)
437-439	Sand

APPENDIX B

TEST WELL
WATER QUALITY DATA

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January 18, 2018

ALLENSWORTH COMMUNITY SERVICES DISTRICT
TW #1 (WELL #3)
Depth Sampling Summary

Sample No.	Depth Cased	Depth Drilled	Type Sample	Static Level	Pumping Rate (gpm)	EC uhmos/cm	TDS ppm	pH	Chromium 6 ppb	EDB/DBCP ppb	1,2,3-TCP ppt	Gross Alpha 15 pCi/L	Arsenic 10 ppb	Nitrate 45 ppm	Iron 300 ppb	Manganese 50 ppb	Chloride 250 ppm
1	97	135	Pumped	63	25	681	460	7.8	5	<0.01	<5	11.10	3	22.4	250	<10	93
2	196	228	Pumped	64	41	275	195	8.1	5.4	<0.01	<5	4.64	8	6.0	<30	6	20
3	237	248	Pumped	74	40	230	173	8.2	3.7	<0.01	<5	2.83	18	7.0	<30	6.2	11
4	296	307	Pumped	116	16	216	150	6.2	0.049	<0.01	<5	1.29	32	<0.4	<30	20.5	8
5	337	352	Pumped	137	8	234	160	7.0	0.054	<0.01	<5	5.86	160	<0.4	<30	14.5	8
6	437	439	Pumped	195	35	229	230	8.8	0.062	<0.01	<5	4.73	91	0.6	40	11.3	7

January 19, 2018

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840228-001
Customer ID : 4-16320

Sampled On : January 11, 2018-14:40
Sampled By : Sean Condon
Received On : January 13, 2018-13:00
Matrix : Water

Description : TW-1 Cased: 97' Drilled:102'
Project : Allensworth

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Irrigation Suit								
Total Hardness as CaCO3	203	--	mg/L		200.7	01/16/18:200530	200.7	01/16/18:200702
Calcium	70	1	mg/L		200.7	01/16/18:200530	200.7	01/16/18:200702
Magnesium	7	1	mg/L		200.7	01/16/18:200530	200.7	01/16/18:200702
Potassium	ND	1	mg/L		200.7	01/16/18:200530	200.7	01/16/18:200702
Sodium	45	1	mg/L		200.7	01/16/18:200530	200.7	01/16/18:200702
Total Cations	6.0	--	meq/L		200.7	01/16/18:200530	200.7	01/16/18:200702
Boron	ND	0.1	mg/L		200.7	01/16/18:200530	200.7	01/16/18:200702
Copper	ND	10	ug/L		200.7	01/16/18:200530	200.7	01/16/18:200702
Iron	250	30	ug/L		200.7	01/16/18:200530	200.7	01/16/18:200702
Manganese	ND	10	ug/L		200.7	01/16/18:200530	200.7	01/16/18:200702
Zinc	50	20	ug/L		200.7	01/16/18:200530	200.7	01/16/18:200702
Gypsum Requirement	0.06	--	Tons/AF		200.7	01/16/18:200530	200.7	01/16/18:200702
SAR	1.4	--	--		200.7	01/16/18:200530	200.7	01/16/18:200702
Total Alkalinity	130	10	mg/L		2320B	01/16/18:200528	2320B	01/16/18:200696
Hydroxide	ND	10	mg/L		2320B	01/16/18:200528	2320B	01/16/18:200696
Carbonate	ND	10	mg/L		2320B	01/16/18:200528	2320B	01/16/18:200696
Bicarbonate	160	10	mg/L		2320B	01/16/18:200528	2320B	01/16/18:200696
Sulfate	41.1	0.5	mg/L		300.0	01/16/18:200633	300.0	01/17/18:200764
Chloride	93	1	mg/L		300.0	01/16/18:200633	300.0	01/17/18:200764
Nitrate	22.4	0.4	mg/L		300.0	01/16/18:200633	300.0	01/17/18:200764
Nitrate Nitrogen	5.1	0.1	mg/L		300.0	01/16/18:200633	300.0	01/17/18:200764
Fluoride	ND	0.1	mg/L		300.0	01/16/18:200633	300.0	01/17/18:200764
Total Anions	6.5	--	meq/L		2320B	01/16/18:200528	2320B	01/16/18:200696
pH	7.8	--	units		4500-H B	01/17/18:200610	4500HB	01/17/18:200724
E. C.	681	1	umhos/cm		2510B	01/16/18:200534	2510B	01/16/18:200639
TDS by Summation	438	--	mg/L		200.7	01/16/18:200530	200.7	01/16/18:200702
Metals, Diss								
Arsenic	3	1	ug/L		200.8	01/17/18:200623	200.8	01/17/18:200784
Iron	ND	30	ug/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Manganese	3.1	0.5	ug/L		200.8	01/17/18:200623	200.8	01/17/18:200784
Wet Chemistry								
Total Dissolved Solids (TFR)	460	20	mg/L		2540CE	01/16/18:200555	2540C	01/17/18:200725

ND=Non-Detected. PQL=Practical Quantitation Limit. * PQL adjusted for dilution.

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January 19, 2018

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840228-001
Customer ID : 4-16320

Sampled On : January 11, 2018-14:40
Sampled By : Sean Condon
Received On : January 13, 2018-13:00
Matrix : Water

Description : TW-1 Cased: 97' Drilled:102'
Project : Allensworth

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation		Sample Analysis	
					Method	Date/ID	Method	Date/ID
Radio Chemistry								
Gross Alpha	11.1 ± 2.60	1.54	pCi/L	15/5	900.0	01/18/18-14:06 2P1800615	900.0	01/18/18-14:34 2A1800818
Uranium	5.87 ± 1.52	0.470	pCi/L	20	908.0	01/17/18-07:00 2P1800284	908.0	01/18/18-16:18 2A1800828

ND=Non-Detected. PQL=Practical Quantitation Limit. * PQL adjusted for dilution.

MDA = Minimum Detectable Activity (Calculated at the 95% confidence level) = Data utilized by DHS to determine matrix interference.
MCL / AL = Maximum Contamination Level / Action Level. Alpha's Action Level of 5 pCi/L is based on the Assigned Value (AV).
AV = Assigned Value(Gross Alpha Result + (0.84 x Error)). CCR Section 64442: Drinking Water Compliance Note: Do the following
If Gross Alpha's (AV) exceeds 5 pCi/L run Uranium. If Gross Alpha's (AV) minus Uranium exceeds 5 pCi/L run Radium 226.

Drinking Water Compliance:
Gross Alpha (AV) minus Uranium is less than or equal to 15 pCi/L
Uranium is less than or equal to 20 pCi/L
Radium 226 + Radium 228 is less than or equal to 5 pCi/L

Note: Samples are held for 3-6 months prior to disposal.

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ENVIRONMENTAL AGRICULTURAL
Analytical Chemists

January 18, 2018

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840228-001
Customer ID : 4-16320

Sampled On : January 11, 2018
Sampled By : Sean Condon
Received On : January 13, 2018
Matrix : Water

Description : TW-1 Cased: 97' Drilled:102'
Project : Allensworth

General Irrigation Suitability Analysis

Test Description	Result				Graphical Results Presentation				
Cations	mg/L	Meq/L	% Meq	Lbs/AF	Good	Possible Problem	Moderate Problem	Increasing Problem	Severe Problem
Calcium	70	3.5	58	190	**				
Magnesium	7	0.58	10	19	**				
Potassium	< 1	0	0	0	**				
Sodium	45	2	32	120					
Anions									
Carbonate	< 10	0	0	0					
Bicarbonate	160	2.6	43	440	**				
Sulfate	41.1	0.86	14	110	**				
Chloride	93	2.6	43	250					
Nitrate	22.4	0.36	6	61					
Nitrate Nitrogen	5.1			14					
Fluoride	< 0.1	0	0	0					
Minor Elements									
Boron	< 0.1			0.00					
Copper	< 0.01			0.00					
Iron	0.25			0.68					
Manganese	< 0.01			0.00					
Zinc	0.050			0.14					
TDS by Summation	438			1200					
Other									
pH	7.8			units					
E. C.	0.681			dS/m					
SAR	1.4								
Crop Suitability									
No Amendments	Fair								
With Amendments	Good								
Amendments									
Gypsum Requirement	0.06			Tons/AF					
Sulfuric Acid (98%)	9.1			oz/1000Gal	Or 22 oz/1000Gal of urea Sulfuric Acid (15/49).				
Leaching Requirement	5.1			%					

Good Problem

Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

** Used in various calculations; mg/L = Milligrams Per Liter (ppm) meq/L = Milliequivalents Per Liter

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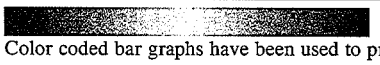
January 18, 2018

Dee Jaspar & Associates

Lab ID : VI 1840228-001
Customer ID : 4-16320
Description : TW-1 Cased: 97' Drilled:102'

Micro Irrigation System Plugging Hazard

Test Description	Result		Graphical Results Presentation
			Slight / Moderate / Severe
Chemical			
Manganese	< 0.01	mg/L	
Iron	0.25	mg/L	
TDS by Summation	438	mg/L	
No Amendments			
pH	7.8	units	
Alkalinity (As CaCO3)	130	mg/L	
Total Hardness	203	mg/L	
With Amendments			
Alkalinity (As CaCO3)	26	mg/L	
Total Hardness	26	mg/L	
pH	5.4 - 6.7	units	



Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Water Amendments Application Notes:

The Amendments recommended on the previous pages include:

Gypsum:

This should be applied at least once a year to the irrigated soil surface area. Gypsum can also be applied in smaller quantities in the irrigation water. Apply the smaller (bracketed) amount of gypsum when also applying the recommended amount of Sulfuric Acid and the larger amount when applying only Gypsum.

Sulfuric Acid:

These products should be applied as needed to prevent emitter plugging in micro irrigation systems and/or as a soil amendment to adjust soil pH to improve nutrient availability and to facilitate leaching of salts. Please exercise caution when using this material as excesses may be harmful to the system and/or the plants being irrigated. The reported Acid requirement is intended to remove approximately 80 % of the alkalinity. The final pH should range from 5.4 to 6.7. We recommend a field pH determination to confirm that the pH you designate is being achieved. This application is based upon the use of a 98% Sulfuric Acid product. The application of Urea Sulfuric Acid is based upon the use of a product that contains 15% Urea (1.89 lbs Nitrogen), 49% Sulfuric Acid and has a specific gravity of 1.52 at 68 °F.

Guidelines for the above interpretations are sourced from USDA & U.C. Cooperative Extension Service publications. Please contact us if you have any questions.

FRUIT GROWERS LABORATORY, INC.

Scott Bucy

Scott Bucy, Director of Ag. Services

SB1:EHB

Kenneth D. Schmidt & Associates, Inc.
3701 Pegasus Drive Suite 112
Suite 112
Bakersfield, CA 93308

Reported: 01/24/2018 21:13
Project: Arvin CSD
Project Number: Allensworth CSD
Project Manager: James Angell

Metals Analysis

BCL Sample ID: 1801477-01 | **Client Sample Name:** TW-1 Cased:97' Drilled:102', 1/11/2018 2:40:00PM, Sean Condon

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Hexavalent Chromium	5.0	ug/L	0.20	0.031	EPA-218.6	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-218.6	01/11/18 19:00	01/11/18 21:18	SAV	IC-4	1	B001747

January 25, 2018

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840253-001
Customer ID : 4-16320

Sampled On : January 13, 2018-12:30
Sampled By : Sean Condon
Received On : January 16, 2018-11:13
Matrix : Water

Description : TW-1 Cased: 196' Drilled: 203'
Project : Allensworth CSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation		Sample Analysis	
					Method	Date/ID	Method	Date/ID
Irrigation Suit								
Total Hardness as CaCO3	79.7	--	mg/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Calcium	27	1	mg/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Magnesium	3	1	mg/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Potassium	ND	1	mg/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Sodium	26	1	mg/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Total Cations	2.7	--	meq/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Boron	ND	0.1	mg/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Copper	ND	10	ug/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Iron	1230	30	ug/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Manganese	50	10	ug/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Zinc	60	20	ug/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Gypsum Requirement	0.1	--	Tons/AF		200.7	01/17/18:200629	200.7	01/17/18:200776
SAR	1.3	--	--		200.7	01/17/18:200629	200.7	01/17/18:200776
Total Alkalinity	70	10	mg/L		2320B	01/16/18:200528	2320B	01/16/18:200696
Hydroxide	ND	10	mg/L		2320B	01/16/18:200528	2320B	01/16/18:200696
Carbonate	ND	10	mg/L		2320B	01/16/18:200528	2320B	01/16/18:200696
Bicarbonate	90	10	mg/L		2320B	01/16/18:200528	2320B	01/16/18:200696
Sulfate	22.9	0.5	mg/L		300.0	01/16/18:200633	300.0	01/17/18:200764
Chloride	20	1	mg/L		300.0	01/16/18:200633	300.0	01/17/18:200764
Nitrate	6.0	0.4	mg/L		4500NO3F	01/16/18:200474	4500NO3F	01/16/18:200686
Nitrate Nitrogen	1.3	0.1	mg/L		4500NO3F	01/16/18:200474	4500NO3F	01/16/18:200686
Fluoride	0.1	0.1	mg/L		300.0	01/16/18:200633	300.0	01/17/18:200764
Total Anions	2.6	--	meq/L		2320B	01/16/18:200528	2320B	01/16/18:200696
pH	8.1	--	units		4500-H B	01/17/18:200610	4500HB	01/17/18:200724
E. C.	275	1	umhos/cm		2510B	01/17/18:200587	2510B	01/17/18:200703
TDS by Summation	195	--	mg/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Metals, Diss								
Arsenic	8	1	ug/L		200.8	01/17/18:200623	200.8	01/17/18:200784
Iron	ND	30	ug/L		200.7	01/18/18:200679	200.7	01/18/18:200854
Manganese	6.0	0.5	ug/L		200.8	01/17/18:200623	200.8	01/17/18:200784
Wet Chemistry								
Total Dissolved Solids (TFR)	220	20	mg/L		2540CE	01/16/18:200555	2540C	01/17/18:200725

ND=Non-Detected. PQL=Practical Quantitation Limit. * PQL adjusted for dilution.

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January 25, 2018

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840253-001
Customer ID : 4-16320

Sampled On : January 13, 2018-12:30
Sampled By : Sean Condon
Received On : January 16, 2018-11:13
Matrix : Water

Description : TW-1 Cased: 196' Drilled: 203'
Project : Allensworth CSD

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation		Sample Analysis	
					Method	Date/ID	Method	Date/ID
Radio Chemistry								
Gross Alpha	4.64 ± 1.74	1.41	pCi/L	15/5	900.0	01/18/18-14:06 2P1800615	900.0	01/18/18-15:14 2A1800822
Uranium	0.770 ± 0.653	0.470	pCi/L	20	908.0	01/17/18-07:00 2P1800284	908.0	01/18/18-16:18 2A1800828

ND=Non-Detected. PQL=Practical Quantitation Limit. * PQL adjusted for dilution.

MDA = Minimum Detectable Activity (Calculated at the 95% confidence level) = Data utilized by DHS to determine matrix interference.
MCL / AL = Maximum Contamination Level / Action Level. Alpha's Action Level of 5 pCi/L is based on the Assigned Value (AV).
AV = Assigned Value(Gross Alpha Result + (0.84 x Error)). CCR Section 64442: Drinking Water Compliance Note: Do the following
If Gross Alpha's (AV) exceeds 5 pCi/L run Uranium. If Gross Alpha's (AV) minus Uranium exceeds 5 pCi/L run Radium 226.

Drinking Water Compliance:
Gross Alpha (AV) minus Uranium is less than or equal to 15 pCi/L
Uranium is less than or equal to 20 pCi/L
Radium 226 + Radium 228 is less than or equal to 5 pCi/L

Note: Samples are held for 3-6 months prior to disposal.

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ENVIRONMENTAL AGRICULTURAL
Analytical Chemists

January 18, 2018

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840253-001
Customer ID : 4-16320

Sampled On : January 13, 2018
Sampled By : Sean Condon
Received On : January 16, 2018
Matrix : Water

Description : TW-1 Cased: 196' Drilled: 203'
Project : Allensworth CSD

General Irrigation Suitability Analysis

Test Description	Result				Graphical Results Presentation				
Cations	mg/L	Meq/L	% Meq	Lbs/AF	Good	Possible Problem	Moderate Problem	Increasing Problem	Severe Problem
Calcium	27	1.3	49	73	**				
Magnesium	3	0.25	9	8	**				
Potassium	< 1	0	0	0	**				
Sodium	26	1.1	41	71					
Anions									
Carbonate	< 10	0	0	0					
Bicarbonate	90	1.5	59	240	**				
Sulfate	22.9	0.48	19	62	**				
Chloride	20	0.56	22	54					
Nitrate	6.0	0.097	4	16					
Nitrate Nitrogen	1.3			4					
Fluoride	0.1	0.0053	0	0.3					
Minor Elements									
Boron	< 0.1			0.00					
Copper	< 0.01			0.00					
Iron	1.2			3.3					
Manganese	0.050			0.14					
Zinc	0.060			0.16					
TDS by Summation	195			530					
Other									
pH	8.1			units					
E. C.	0.275			dS/m					
SAR	1.3								
Crop Suitability									
No Amendments	Fairly		Poor						
With Amendments	Good								
Amendments									
Gypsum Requirement	0.1			Tons/AF					
Sulfuric Acid (98%)	4.9			oz/1000Gal	Or 12 oz/1000Gal of urea Sulfuric Acid (15/49).				
Leaching Requirement	2			%					

Good Problem

Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

** Used in various calculations; mg/L = Milligrams Per Liter (ppm) meq/L = Milliequivalents Per Liter

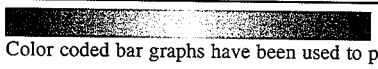
January 18, 2018

Dee Jaspar & Associates

Lab ID : VI 1840253-001
Customer ID : 4-16320
Description : TW-1 Cased: 196' Drilled: 203'

Micro Irrigation System Plugging Hazard

Test Description	Result		Graphical Results Presentation (Slight / Moderate / Severe)
Chemical			
Manganese	0.05	mg/L	
Iron	1.2	mg/L	
TDS by Summation	195	mg/L	
No Amendments			
pH	8.1	units	
Alkalinity (As CaCO3)	70	mg/L	
Total Hardness	79.7	mg/L	
With Amendments			
Alkalinity (As CaCO3)	14	mg/L	
Total Hardness	14	mg/L	
pH	5.4 - 6.7	units	



Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Water Amendments Application Notes:

The Amendments recommended on the previous pages include:

Gypsum:

This should be applied at least once a year to the irrigated soil surface area. Gypsum can also be applied in smaller quantities in the irrigation water. Apply the smaller (bracketed) amount of gypsum when also applying the recommended amount of Sulfuric Acid and the larger amount when applying only Gypsum.

Sulfuric Acid:

These products should be applied as needed to prevent emitter plugging in micro irrigation systems and/or as a soil amendment to adjust soil pH to improve nutrient availability and to facilitate leaching of salts. Please exercise caution when using this material as excesses may be harmful to the system and/or the plants being irrigated. The reported Acid requirement is intended to remove approximately 80 % of the alkalinity. The final pH should range from 5.4 to 6.7. We recommend a field pH determination to confirm that the pH you designate is being achieved. This application is based upon the use of a 98% Sulfuric Acid product. The application of Urea Sulfuric Acid is based upon the use of a product that contains 15% Urea (1.89 lbs Nitrogen), 49% Sulfuric Acid and has a specific gravity of 1.52 at 68 °F.
Guidelines for the above interpretations are sourced from USDA & U.C. Cooperative Extension Service publications. Please contact us if you have any questions.

FRUIT GROWERS LABORATORY, INC.

Scott Bucy

Scott Bucy, Director of Ag. Services

SB1:EHB

Kenneth D. Schmidt & Associates, Inc.
3701 Pegasus Drive Suite 112
Suite 112
Bakersfield, CA 93308

Reported: 01/29/2018 21:41
Project: Water samples
Project Number: Allensworth CSD
Project Manager: James Angell

Metals Analysis

BCL Sample ID: 1801654-01 | **Client Sample Name:** TW-1 Cased:196' Drilled:203', 1/13/2018 12:30:00PM, Sean Condon

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Hexavalent Chromium	5.4	ug/L	0.20	0.031	EPA-218.6	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-218.6	01/15/18 19:00	01/15/18 20:36	TMS	IC-4	1	B002064

January 25, 2018

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840253-002
Customer ID : 4-16320

Sampled On : January 14, 2018-13:15
Sampled By : Sean Condon
Received On : January 16, 2018-11:13
Matrix : Water

Description : TW-1 Cased: 237'
Project : Allensworth CSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation		Sample Analysis	
					Method	Date/ID	Method	Date/ID
Irrigation Suit								
Total Hardness as CaCO3	63.1	--	mg/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Calcium	22	1	mg/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Magnesium	2	1	mg/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Potassium	1	1	mg/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Sodium	28	1	mg/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Total Cations	2.5	--	meq/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Boron	ND	0.1	mg/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Copper	180	10	ug/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Iron	1100	30	ug/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Manganese	150	10	ug/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Zinc	130	20	ug/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Gypsum Requirement	0.2	--	Tons/AF		200.7	01/17/18:200629	200.7	01/17/18:200776
SAR	1.5	--	--		200.7	01/17/18:200629	200.7	01/17/18:200776
Total Alkalinity	70	10	mg/L		2320B	01/16/18:200528	2320B	01/16/18:200696
Hydroxide	ND	10	mg/L		2320B	01/16/18:200528	2320B	01/16/18:200696
Carbonate	ND	10	mg/L		2320B	01/16/18:200528	2320B	01/16/18:200696
Bicarbonate	90	10	mg/L		2320B	01/16/18:200528	2320B	01/16/18:200696
Sulfate	12.0	0.5	mg/L		300.0	01/16/18:200633	300.0	01/17/18:200764
Chloride	11	1	mg/L		300.0	01/16/18:200633	300.0	01/17/18:200764
Nitrate	7.0	0.4	mg/L		4500NO3F	01/16/18:200474	4500NO3F	01/16/18:200686
Nitrate Nitrogen	1.6	0.1	mg/L		4500NO3F	01/16/18:200474	4500NO3F	01/16/18:200686
Fluoride	0.2	0.1	mg/L		300.0	01/16/18:200633	300.0	01/17/18:200764
Total Anions	2.2	--	meq/L		2320B	01/16/18:200528	2320B	01/16/18:200696
pH	8.2	--	units		4500-H B	01/17/18:200610	4500HB	01/17/18:200724
E. C.	230	1	umhos/cm		2510B	01/17/18:200587	2510B	01/17/18:200703
TDS by Summation	173	--	mg/L		200.7	01/17/18:200629	200.7	01/17/18:200776
Metals, Diss								
Arsenic	18	1	ug/L		200.8	01/17/18:200623	200.8	01/17/18:200784
Iron	ND	30	ug/L		200.7	01/18/18:200679	200.7	01/18/18:200854
Manganese	6.2	0.5	ug/L		200.8	01/17/18:200623	200.8	01/17/18:200784
Wet Chemistry								
Total Dissolved Solids (TFR)	150	20	mg/L		2540CE	01/16/18:200555	2540C	01/17/18:200725

ND=Non-Detected. PQL=Practical Quantitation Limit. * PQL adjusted for dilution.

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January 25, 2018

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840253-002
Customer ID : 4-16320

Sampled On : January 14, 2018-13:15
Sampled By : Sean Condon
Received On : January 16, 2018-11:13
Matrix : Water

Description : TW-1 Cased: 237'
Project : Allensworth CSD

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry								
Gross Alpha	2.83 ± 1.39	1.26	pCi/L	15/5	900.0	01/18/18-14:06 2P1800615	900.0	01/18/18-15:18 2A1800823
Uranium	0.770 ± 0.653	0.470	pCi/L	20	908.0	01/17/18-07:00 2P1800284	908.0	01/18/18-16:18 2A1800828

ND=Non-Detected. PQL=Practical Quantitation Limit. * PQL adjusted for dilution.

MDA = Minimum Detectable Activity (Calculated at the 95% confidence level) = Data utilized by DHS to determine matrix interference.
MCL / AL = Maximum Contamination Level / Action Level. Alpha's Action Level of 5 pCi/L is based on the Assigned Value (AV).
AV = Assigned Value(Gross Alpha Result + (0.84 x Error)). CCR Section 64442: Drinking Water Compliance Note: Do the following
If Gross Alpha's (AV) exceeds 5 pCi/L run Uranium. If Gross Alpha's (AV) minus Uranium exceeds 5 pCi/L run Radium 226.

Drinking Water Compliance:
Gross Alpha (AV) minus Uranium is less than or equal to 15 pCi/L
Uranium is less than or equal to 20 pCi/L
Radium 226 + Radium 228 is less than or equal to 5 pCi/L

Note: Samples are held for 3-6 months prior to disposal.

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Analytical Chemists

January 18, 2018

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840253-002
Customer ID : 4-16320

Sampled On : January 14, 2018
Sampled By : Sean Condon
Received On : January 16, 2018
Matrix : Water

Description : TW-1 Cased: 237'
Project : Allensworth CSD

General Irrigation Suitability Analysis

Test Description	Result				Graphical Results Presentation				
Cations	mg/L	Meq/L	% Meq	Lbs/AF	Good	Possible Problem	Moderate Problem	Increasing Problem	Severe Problem
Calcium	22	1.1	44	60	**				
Magnesium	2	0.16	7	5	**				
Potassium	1	0.026	1	3	**				
Sodium	28	1.2	49	76					
Anions									
Carbonate	< 10	0	0	0					
Bicarbonate	90	1.5	72	240	**				
Sulfate	12.0	0.25	12	33	**				
Chloride	11	0.31	15	30					
Nitrate	7.0	0.11	6	19					
Nitrate Nitrogen	1.6			4					
Fluoride	0.2	0.011	1	0.5					
Minor Elements									
Boron	< 0.1			0.00					
Copper	0.18			0.49					
Iron	1.1			3.0					
Manganese	0.15			0.41					
Zinc	0.13			0.35					
TDS by Summation	173			470					
Other									
pH	8.2			units					
E. C.	0.230			dS/m					
SAR	1.5								
Crop Suitability									
No Amendments	Fairly		Poor						
With Amendments	Good								
Amendments									
Gypsum Requirement	0.2			Tons/AF					
Sulfuric Acid (98%)	4.9			oz/1000Gal	Or 12 oz/1000Gal of urea Sulfuric Acid (15/49).				
Leaching Requirement	1.7			%					

Good Problem

Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

** Used in various calculations; mg/L = Milligrams Per Liter (ppm) meq/L = Milliequivalents Per Liter

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January 18, 2018

Dee Jaspar & Associates

Lab ID : VI 1840253-002
Customer ID : 4-16320
Description : TW-1 Cased: 237'

Micro Irrigation System Plugging Hazard

Test Description	Result		Graphical Results Presentation (Slight / Moderate / Severe)
Chemical			
Manganese	0.15	mg/L	
Iron	1.1	mg/L	
TDS by Summation	173	mg/L	
No Amendments			
pH	8.2	units	
Alkalinity (As CaCO3)	70	mg/L	
Total Hardness	63.1	mg/L	
With Amendments			
Alkalinity (As CaCO3)	14	mg/L	
Total Hardness	14	mg/L	
pH	5.4 - 6.7	units	

Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Water Amendments Application Notes:

The Amendments recommended on the previous pages include:

Gypsum:

This should be applied at least once a year to the irrigated soil surface area. Gypsum can also be applied in smaller quantities in the irrigation water. Apply the smaller (bracketed) amount of gypsum when also applying the recommended amount of Sulfuric Acid and the larger amount when applying only Gypsum.

Sulfuric Acid:

These products should be applied as needed to prevent emitter plugging in micro irrigation systems and/or as a soil amendment to adjust soil pH to improve nutrient availability and to facilitate leaching of salts. Please exercise caution when using this material as excesses may be harmful to the system and/or the plants being irrigated. The reported Acid requirement is intended to remove approximately 80 % of the alkalinity. The final pH should range from 5.4 to 6.7. We recommend a field pH determination to confirm that the pH you designate is being achieved. This application is based upon the use of a 98% Sulfuric Acid product. The application of Urea Sulfuric Acid is based upon the use of a product that contains 15% Urea (1.89 lbs Nitrogen), 49% Sulfuric Acid and has a specific gravity of 1.52 at 68 °F.
Guidelines for the above interpretations are sourced from USDA & U.C. Cooperative Extension Service publications. Please contact us if you have any questions.

FRUIT GROWERS LABORATORY, INC.

Scott Bucy

Scott Bucy, Director of Ag. Services

SB1:EHB

Kenneth D. Schmidt & Associates, Inc.
3701 Pegasus Drive Suite 112
Suite 112
Bakersfield, CA 93308

Reported: 01/29/2018 21:41
Project: Water samples
Project Number: Allensworth CSD
Project Manager: James Angell

Metals Analysis

BCL Sample ID: 1801654-02 | **Client Sample Name:** TW-1 Cased:237' Drilled:, 1/14/2018 1:15:00PM, Sean Condon

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Hexavalent Chromium	3.7	ug/L	0.20	0.031	EPA-218.6	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-218.6	01/15/18 19:00	01/15/18 20:46	TMS	IC-4	1	B002064

DBCP and EDB

Kenneth D. Schmidt & Assoc.
3701 Pegasus Dr., Ste 112
Bakersfield, CA 93308

Attn: James Angell

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Project: ALLENSWORTH CSD

ARF: 84709

Sample ID: TW-1 CASED: 237' DRILLED:

APPL ID AZ66910

Sample Collection Date: 01/14/18

QCG: #DOHSC-180119A-22590

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
DOHS	DBCP	Not detected	0.01	ug/L	01/19/18	01/22/18
DOHS	EDB	Not detected	0.01	ug/L	01/19/18	01/22/18
DOHS	SURROGATE: 1,3-DIBROMOPROPANE (S	97.2	54-135	%	01/19/18	01/22/18

Quant Method: DOHS0122.M
Run #: 1219144
Instrument: Herbie
Sequence: 171219
Dilution Factor: 1
Initials: AAB

Printed: 01/30/18 2:11:33 PM
Form 1 - APPL Standard GC - No MC

February 2, 2018

Lab ID : VI 1840334-001
Customer ID : 4-16320

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Sampled On : January 16, 2018-16:40
Sampled By : J. Angell
Received On : January 20, 2018-14:15
Matrix : Water

Description : TW- Cased:296' Drilled: 307'
Project : Allensworth CSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Irrigation Suit								
Total Hardness as CaCO3	64.7	--	mg/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Calcium	21	1	mg/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Magnesium	3	1	mg/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Potassium	1	1	mg/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Sodium	33	1	mg/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Total Cations	2.8	--	meq/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Boron	ND	0.1	mg/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Copper	40	10	ug/L		200.7	01/23/18:200862	200.7	01/23/18:201076
Iron	2500	30	ug/L		200.7	01/23/18:200862	200.7	01/23/18:201076
Manganese	300	10	ug/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Zinc	70	20	ug/L		200.7	01/23/18:200862	200.7	01/23/18:201076
Gypsum Requirement	0.2	--	Tons/AF		200.7	01/23/18:200862	200.7	01/23/18:201073
SAR	1.8	--	--		200.7	01/23/18:200862	200.7	01/23/18:201073
Total Alkalinity	80	10	mg/L		2320B	01/22/18:200810	2320B	01/22/18:201028
Hydroxide	ND	10	mg/L		2320B	01/22/18:200810	2320B	01/22/18:201028
Carbonate	ND	10	mg/L		2320B	01/22/18:200810	2320B	01/22/18:201028
Bicarbonate	100	10	mg/L		2320B	01/22/18:200810	2320B	01/22/18:201028
Sulfate	8.4	0.5	mg/L		300.0	01/22/18:200994	300.0	01/22/18:201371
Chloride	8	1	mg/L		300.0	01/22/18:200994	300.0	01/22/18:201371
Nitrate	ND	0.4	mg/L		300.0	01/22/18:200994	300.0	01/22/18:201371
Nitrate Nitrogen	ND	0.1	mg/L		300.0	01/22/18:200994	300.0	01/22/18:201371
Fluoride	0.4	0.1	mg/L		300.0	01/22/18:200994	300.0	01/22/18:201371
Total Anions	2.1	--	meq/L		2320B	01/22/18:200810	2320B	01/22/18:201028
pH	6.2	--	units		4500-H B	01/24/18:200906	4500HB	01/24/18:201097
E. C.	216	1	umhos/cm		2510B	01/23/18:200853	2510B	01/23/18:201031
TDS by Summation	175	--	mg/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Metals, Diss								
Arsenic	32	1	ug/L		200.8	01/23/18:200865	200.8	01/23/18:201093
Iron	ND	30	ug/L		200.7	01/24/18:200927	200.7	01/24/18:201141
Manganese	20.5	0.5	ug/L		200.8	01/23/18:200865	200.8	01/23/18:201093
Wet Chemistry								
Total Dissolved Solids (TFR)	150	20	mg/L		2540CE	01/22/18:200827	2540C	01/23/18:201020

ND=Non-Detected. PQL=Practical Quantitation Limit. * PQL adjusted for dilution.

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February 2, 2018

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840334-001
Customer ID : 4-16320

Sampled On : January 16, 2018-16:40
Sampled By : J. Angell
Received On : January 20, 2018-14:15
Matrix : Water

Description : TW- Cased:296' Drilled: 307'
Project : Allensworth CSD

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry								
Gross Alpha	1.29 ± 1.07	1.27	pCi/L	15/5	900.0	01/22/18-17:50 2P1800813	900.0	01/25/18-14:44 2A1801181
Uranium	1.07 ± 0.979	0.470	pCi/L	20	908.0	01/29/18-10:00 2P1801070	908.0	02/01/18-08:00 2A1801562

ND=Non-Detected. PQL=Practical Quantitation Limit. * PQL adjusted for dilution.

MDA = Minimum Detectable Activity (Calculated at the 95% confidence level) = Data utilized by DHS to determine matrix interference.
MCL / AL = Maximum Contamination Level / Action Level. Alpha's Action Level of 5 pCi/L is based on the Assigned Value (AV).
AV = Assigned Value(Gross Alpha Result + (0.84 x Error)). CCR Section 64442: Drinking Water Compliance Note: Do the following
If Gross Alpha's (AV) exceeds 5 pCi/L run Uranium. If Gross Alpha's (AV) minus Uranium exceeds 5 pCi/L run Radium 226.

Drinking Water Compliance:
Gross Alpha (AV) minus Uranium is less than or equal to 15 pCi/L
Uranium is less than or equal to 20 pCi/L
Radium 226 + Radium 228 is less than or equal to 5 pCi/L

Note: Samples are held for 3-6 months prior to disposal.

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Analytical Chemists

February 2, 2018

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840334-001
Customer ID : 4-16320

Sampled On : January 16, 2018
Sampled By : J. Angell
Received On : January 20, 2018
Matrix : Water

Description : TW- Cased:296' Drilled: 307'
Project : Allensworth CSD

General Irrigation Suitability Analysis

Test Description	Result				Graphical Results Presentation				
Cations	mg/L	Meq/L	% Meq	Lbs/AF	Good	Possible Problem	Moderate Problem	Increasing Problem	Severe Problem
Calcium	21	1	38	57	**				
Magnesium	3	0.25	9	8	**				
Potassium	1	0.026	1	3	**				
Sodium	33	1.4	52	90					
Anions									
Carbonate	< 10	0	0	0					
Bicarbonate	100	1.6	80	270	**				
Sulfate	8.4	0.17	8	23	**				
Chloride	8	0.23	11	22					
Nitrate	< 0.4	0	0	0					
Nitrate Nitrogen	< 0.1			0					
Fluoride	0.4	0.021	1	1					
Minor Elements									
Boron	< 0.1			0.00					
Copper	0.040			0.11					
Iron	2.5			6.8					
Manganese	0.30			0.82					
Zinc	0.070			0.19					
TDS by Summation	175			480					
Other									
pH	6.2			units					
E. C.	0.216			dS/m					
SAR	1.8								
Crop Suitability									
No Amendments	Good								
With Amendments	Good								
Amendments									
Gypsum Requirement	0.2			Tons/AF					
Sulfuric Acid (98%)	5.6			oz/1000Gal	Or 14 oz/1000Gal of urea Sulfuric Acid (15/49).				
Leaching Requirement	1.6			%					

Good Problem

Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

** Used in various calculations; mg/L = Milligrams Per Liter (ppm) meq/L = Milliequivalents Per Liter

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February 2, 2018

Dee Jaspar & Associates

Lab ID : VI 1840334-001
Customer ID : 4-16320
Description : TW- Cased:296' Drilled: 307'

Micro Irrigation System Plugging Hazard

Test Description	Result		Graphical Results Presentation (Slight / Moderate / Severe)
Chemical			
Manganese	0.3	mg/L	
Iron	2.5	mg/L	
TDS by Summation	175	mg/L	
No Amendments			
pH	6.2	units	
Alkalinity (As CaCO3)	80	mg/L	
Total Hardness	64.7	mg/L	
With Amendments			
Alkalinity (As CaCO3)	16	mg/L	
Total Hardness	16	mg/L	
pH	5.4 - 6.7	units	

Good Problem

Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Water Amendments Application Notes:

The Amendments recommended on the previous pages include:

Gypsum:

This should be applied at least once a year to the irrigated soil surface area. Gypsum can also be applied in smaller quantities in the irrigation water. Apply the smaller (bracketed) amount of gypsum when also applying the recommended amount of Sulfuric Acid and the larger amount when applying only Gypsum.

Sulfuric Acid:

These products should be applied as needed to prevent emitter plugging in micro irrigation systems and/or as a soil amendment to adjust soil pH to improve nutrient availability and to facilitate leaching of salts. Please exercise caution when using this material as excesses may be harmful to the system and/or the plants being irrigated. The reported Acid requirement is intended to remove approximately 80 % of the alkalinity. The final pH should range from 5.4 to 6.7. We recommend a field pH determination to confirm that the pH you designate is being achieved. This application is based upon the use of a 98% Sulfuric Acid product. The application of Urea Sulfuric Acid is based upon the use of a product that contains 15% Urea (1.89 lbs Nitrogen), 49% Sulfuric Acid and has a specific gravity of 1.52 at 68 °F.

Guidelines for the above interpretations are sourced from USDA & U.C. Cooperative Extension Service publications. Please contact us if you have any questions.

FRUIT GROWERS LABORATORY, INC.

Scott Bucy

Scott Bucy, Director of Ag. Services

SB1:EHB

Kenneth D. Schmidt & Associates, Inc.
3701 Pegasus Drive Suite 112
Suite 112
Bakersfield, CA 93308

Reported: 02/02/2018 21:09
Project: Water samples
Project Number: Allensworth CSD
Project Manager: James Angell

Metals Analysis

BCL Sample ID: 1802294-01 | **Client Sample Name:** TW-1 Cased: 296' Drilled:307', 1/16/2018 4:40:00PM, J. Angell

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Hexavalent Chromium	0.049	ug/L	0.20	0.031	EPA-218.6	ND	J	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-218.6	01/19/18 18:00	01/19/18 19:34	SAV	IC-4	1	B002596

February 2, 2018

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840334-002
Customer ID : 4-16320

Sampled On : January 18, 2018-10:20
Sampled By : J. Angell
Received On : January 20, 2018-14:15
Matrix : Water

Description : TW- Cased:337'
Project : Allensworth CSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation		Sample Analysis	
					Method	Date/ID	Method	Date/ID
Irrigation Suit								
Total Hardness as CaCO3	120	--	mg/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Calcium	35	1	mg/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Magnesium	8	1	mg/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Potassium	3	1	mg/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Sodium	36	1	mg/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Total Cations	4.0	--	meq/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Boron	ND	0.1	mg/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Copper	1060	10	ug/L		200.7	01/23/18:200862	200.7	01/23/18:201076
Iron	29500	30	ug/L		200.7	01/23/18:200862	200.7	01/23/18:201076
Manganese	910	10	ug/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Zinc	810	20	ug/L		200.7	01/23/18:200862	200.7	01/23/18:201076
Gypsum Requirement	0.1	--	Tons/AF		200.7	01/23/18:200862	200.7	01/23/18:201073
SAR	1.4	--	--		200.7	01/23/18:200862	200.7	01/23/18:201073
Total Alkalinity	90	10	mg/L		2320B	01/22/18:200810	2320B	01/22/18:201028
Hydroxide	ND	10	mg/L		2320B	01/22/18:200810	2320B	01/22/18:201028
Carbonate	ND	10	mg/L		2320B	01/22/18:200810	2320B	01/22/18:201028
Bicarbonate	110	10	mg/L		2320B	01/22/18:200810	2320B	01/22/18:201028
Sulfate	7.9	0.5	mg/L		300.0	01/22/18:200994	300.0	01/23/18:201371
Chloride	8	1	mg/L		300.0	01/22/18:200994	300.0	01/23/18:201371
Nitrate	ND	0.4	mg/L		300.0	01/22/18:200994	300.0	01/23/18:201371
Nitrate Nitrogen	ND	0.1	mg/L		300.0	01/22/18:200994	300.0	01/23/18:201371
Fluoride	0.5	0.1	mg/L		300.0	01/22/18:200994	300.0	01/23/18:201371
Total Anions	2.2	--	meq/L		2320B	01/22/18:200810	2320B	01/22/18:201028
pH	7.0	--	units		4500-H B	01/24/18:200906	4500HB	01/24/18:201097
E. C.	234	1	umhos/cm		2510B	01/23/18:200853	2510B	01/23/18:201031
TDS by Summation	208	--	mg/L		200.7	01/23/18:200862	200.7	01/23/18:201073
Metals, Diss								
Arsenic	160	1	ug/L		200.8	01/23/18:200865	200.8	01/23/18:201093
Iron	ND	30	ug/L		200.7	01/24/18:200927	200.7	01/24/18:201141
Manganese	14.5	0.5	ug/L		200.8	01/23/18:200865	200.8	01/23/18:201093
Wet Chemistry								
Total Dissolved Solids (TFR)	160	20	mg/L		2540CE	01/22/18:200827	2540C	01/23/18:201020

ND=Non-Detected. PQL=Practical Quantitation Limit. * PQL adjusted for dilution.

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February 2, 2018

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2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840334-002
Customer ID : 4-16320

Sampled On : January 18, 2018-10:20
Sampled By : J. Angell
Received On : January 20, 2018-14:15
Matrix : Water

Description : TW- Cased:337'
Project : Allensworth CSD

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Radio Chemistry								
Gross Alpha	5.86 ± 1.82	1.23	pCi/L	15/5	900.0	01/22/18-17:50 2P1800813	900.0	01/23/18-13:13 2A1801172
Uranium	2.67 ± 1.33	0.470	pCi/L	20	908.0	01/29/18-10:00 2P1801070	908.0	02/01/18-08:00 2A1801562

ND=Non-Detected. PQL=Practical Quantitation Limit. * PQL adjusted for dilution.

MDA = Minimum Detectable Activity (Calculated at the 95% confidence level) = Data utilized by DHS to determine matrix interference.
MCL / AL = Maximum Contamination Level / Action Level. Alpha's Action Level of 5 pCi/L is based on the Assigned Value (AV).
AV = Assigned Value(Gross Alpha Result + (0.84 x Error)). CCR Section 64442: Drinking Water Compliance Note: Do the following
If Gross Alpha's (AV) exceeds 5 pCi/L run Uranium. If Gross Alpha's (AV) minus Uranium exceeds 5 pCi/L run Radium 226.

Drinking Water Compliance:
Gross Alpha (AV) minus Uranium is less than or equal to 15 pCi/L
Uranium is less than or equal to 20 pCi/L
Radium 226 + Radium 228 is less than or equal to 5 pCi/L

Note: Samples are held for 3-6 months prior to disposal.

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Analytical Chemists

February 2, 2018

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Lab ID : VI 1840334-002
Customer ID : 4-16320

Sampled On : January 18, 2018
Sampled By : J. Angell
Received On : January 20, 2018
Matrix : Water

Description : TW- Cased:337'
Project : Allensworth CSD

General Irrigation Suitability Analysis

Test Description	Result				Graphical Results Presentation				
Cations	mg/L	Meq/L	% Meq	Lbs/AF	Good	Possible Problem	Moderate Problem	Increasing Problem	Severe Problem
Calcium	35	1.7	43	95	**				
Magnesium	8	0.66	16	22	**				
Potassium	3	0.077	2	8	**				
Sodium	36	1.6	39	98					
Anions									
Carbonate	< 10	0	0	0					
Bicarbonate	110	1.8	81	300	**				
Sulfate	7.9	0.16	7	21	**				
Chloride	8	0.23	10	22					
Nitrate	< 0.4	0	0	0					
Nitrate Nitrogen	< 0.1			0					
Fluoride	0.5	0.026	1	1					
Minor Elements									
Boron	< 0.1			0.00					
Copper	1.1			2.9					
Iron	30			80					
Manganese	0.91			2.5					
Zinc	0.81			2.2					
TDS by Summation	208			570					
Other									
pH	7.0			units					
E. C.	0.234			dS/m					
SAR	1.4								
Crop Suitability									
No Amendments	Good								
With Amendments	Good								
Amendments									
Gypsum Requirement	0.1			Tons/AF					
Sulfuric Acid (98%)	6.3			oz/1000Gal	Or 15 oz/1000Gal of urea Sulfuric Acid (15/49).				
Leaching Requirement	1.7			%					

Good Problem

Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

** Used in various calculations; mg/L = Milligrams Per Liter (ppm) meq/L = Milliequivalents Per Liter

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Office & Laboratory
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TEL: (559)734-9473
FAX: (559)734-8435
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February 2, 2018

Dee Jaspar & Associates

Lab ID : VI 1840334-002
Customer ID : 4-16320
Description : TW- Cased:337'

Micro Irrigation System Plugging Hazard

Test Description	Result		Graphical Results Presentation
			Slight / Moderate / Severe
Chemical			
Manganese	0.91	mg/L	
Iron	30	mg/L	
TDS by Summation	208	mg/L	
No Amendments			
pH	7.0	units	
Alkalinity (As CaCO3)	90	mg/L	
Total Hardness	120	mg/L	
With Amendments			
Alkalinity (As CaCO3)	18	mg/L	
Total Hardness	18	mg/L	
pH	5.4 - 6.7	units	

Good Problem

Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Water Amendments Application Notes:

The Amendments recommended on the previous pages include:

Gypsum:

This should be applied at least once a year to the irrigated soil surface area. Gypsum can also be applied in smaller quantities in the irrigation water. Apply the smaller (bracketed) amount of gypsum when also applying the recommended amount of Sulfuric Acid and the larger amount when applying only Gypsum.

Sulfuric Acid:

These products should be applied as needed to prevent emitter plugging in micro irrigation systems and/or as a soil amendment to adjust soil pH to improve nutrient availability and to facilitate leaching of salts. Please exercise caution when using this material as excesses may be harmful to the system and/or the plants being irrigated. The reported Acid requirement is intended to remove approximately 80 % of the alkalinity. The final pH should range from 5.4 to 6.7. We recommend a field pH determination to confirm that the pH you designate is being achieved. This application is based upon the use of a 98% Sulfuric Acid product. The application of Urea Sulfuric Acid is based upon the use of a product that contains 15% Urea (1.89 lbs Nitrogen), 49% Sulfuric Acid and has a specific gravity of 1.52 at 68 °F.

Guidelines for the above interpretations are sourced from USDA & U.C. Cooperative Extension Service publications. Please contact us if you have any questions.

FRUIT GROWERS LABORATORY, INC.

Scott Bucy

Scott Bucy, Director of Ag. Services

SB1:EHB

Kenneth D. Schmidt & Associates, Inc.
3701 Pegasus Drive Suite 112
Suite 112
Bakersfield, CA 93308

Reported: 02/02/2018 21:09
Project: Water samples
Project Number: Allensworth CSD
Project Manager: James Angell

Metals Analysis

BCL Sample ID: 1802294-02 | **Client Sample Name:** TW-1 Cased: 337', 1/18/2018 10:20:00AM, J. Angell

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Hexavalent Chromium	**0.054**	**ug/L**	**0.20**	**0.031**	**EPA-218.6**	ND	J	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-218.6	01/19/18 18:00	01/19/18 19:43	SAV	IC-4	1	B002596

February 2, 2018

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840402-001
Customer ID : 4-16320

Sampled On : January 20, 2018-17:40
Sampled By : Sean Condon
Received On : January 23, 2018-11:20
Matrix : Water

Description : TW-1 Cased: 437'
Project : Allensworth CSD

Sample Result - Inorganic

Constituent	Result	PQL	Units	Note	Sample Preparation Method	Sample Preparation Date/ID	Sample Analysis Method	Sample Analysis Date/ID
Irrigation Suit								
Total Hardness as CaCO3	189	--	mg/L		200.7	01/25/18:200964	200.7	01/25/18:201209
Calcium	46	1	mg/L		200.7	01/25/18:200964	200.7	01/25/18:201209
Magnesium	18	1	mg/L		200.7	01/25/18:200964	200.7	01/25/18:201209
Potassium	6	1	mg/L		200.7	01/25/18:200964	200.7	01/25/18:201209
Sodium	44	1	mg/L		200.7	01/25/18:200964	200.7	01/25/18:201209
Total Cations	5.8	--	meq/L		200.7	01/25/18:200964	200.7	01/25/18:201209
Boron	0.1	0.1	mg/L		200.7	01/25/18:200964	200.7	01/25/18:201209
Copper	130	10	ug/L		200.7	01/25/18:200964	200.7	01/25/18:201209
Iron	63300	30	ug/L		200.7	01/25/18:200964	200.7	01/25/18:201209
Manganese	1580	10	ug/L		200.7	01/25/18:200964	200.7	01/25/18:201209
Zinc	440	20	ug/L		200.7	01/25/18:200964	200.7	01/25/18:201209
Gypsum Requirement	0.01	--	Tons/AF		200.7	01/25/18:200964	200.7	01/25/18:201209
SAR	1.4	--	--		200.7	01/25/18:200964	200.7	01/25/18:201209
Total Alkalinity	90	10	mg/L		2320B	01/25/18:200945	2320B	01/25/18:201159
Hydroxide	ND	10	mg/L		2320B	01/25/18:200945	2320B	01/25/18:201159
Carbonate	ND	10	mg/L		2320B	01/25/18:200945	2320B	01/25/18:201159
Bicarbonate	110	10	mg/L		2320B	01/25/18:200945	2320B	01/25/18:201159
Sulfate	7.7	0.5	mg/L		300.0	01/23/18:200995	300.0	01/23/18:201370
Chloride	7	1	mg/L		300.0	01/23/18:200995	300.0	01/23/18:201370
Nitrate	0.6	0.4	mg/L		4500NO3F	01/23/18:200867	4500NO3F	01/23/18:201057
Nitrate Nitrogen	ND	0.1	mg/L		300.0	01/23/18:200995	300.0	01/23/18:201370
Fluoride	0.7	0.1	mg/L		300.0	01/23/18:200995	300.0	01/23/18:201370
Total Anions	2.2	--	meq/L		2320B	01/25/18:200945	2320B	01/25/18:201159
pH	8.8	--	units		4500-H B	01/25/18:200943	4500HB	01/25/18:201144
E. C.	229	1	umhos/cm		2510B	01/24/18:200880	2510B	01/24/18:201075
TDS by Summation	240	--	mg/L		200.7	01/25/18:200964	200.7	01/25/18:201209
Metals, Diss								
Arsenic	91	1	ug/L		200.8	01/25/18:200947	200.8	01/25/18:201167
Iron	40	30	ug/L		200.7	01/25/18:200964	200.7	01/25/18:201209
Manganese	11.3	0.5	ug/L		200.8	01/25/18:200947	200.8	01/25/18:201167
Wet Chemistry								
Total Dissolved Solids (TFR)	230	20	mg/L		2540CE	01/23/18:200856	2540C	01/24/18:201069

ND=Non-Detected. PQL=Practical Quantitation Limit. * PQL adjusted for dilution.

Corporate Offices & Laboratory
853 Corporation Street
Santa Paula, CA 93060
TEL: (805)392-2000
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February 2, 2018

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840402-001
Customer ID : 4-16320

Sampled On : January 20, 2018-17:40
Sampled By : Sean Condon
Received On : January 23, 2018-11:20
Matrix : Water

Description : TW-1 Cased: 437'
Project : Allensworth CSD

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation		Sample Analysis	
					Method	Date/ID	Method	Date/ID
Radio Chemistry								
Gross Alpha	4.73 ± 1.53	1.17	pCi/L	15/5	900.0	01/25/18-12:00 2P1800950	900.0	01/29/18-11:04 2A1801309
Uranium	1.87 ± 1.17	0.470	pCi/L	20	908.0	01/29/18-10:00 2P1801070	908.0	02/01/18-08:00 2A1801562

ND=Non-Detected. PQL=Practical Quantitation Limit. * PQL adjusted for dilution.

MDA = Minimum Detectable Activity (Calculated at the 95% confidence level) = Data utilized by DHS to determine matrix interference.
MCL / AL = Maximum Contamination Level / Action Level. Alpha's Action Level of 5 pCi/L is based on the Assigned Value (AV).
AV = Assigned Value(Gross Alpha Result + (0.84 x Error)). CCR Section 64442: Drinking Water Compliance Note: Do the following
If Gross Alpha's (AV) exceeds 5 pCi/L run Uranium. If Gross Alpha's (AV) minus Uranium exceeds 5 pCi/L run Radium 226.

Drinking Water Compliance:
Gross Alpha (AV) minus Uranium is less than or equal to 15 pCi/L
Uranium is less than or equal to 20 pCi/L
Radium 226 + Radium 228 is less than or equal to 5 pCi/L

Note: Samples are held for 3-6 months prior to disposal.

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ENVIRONMENTAL AGRICULTURAL
Analytical Chemists

February 2, 2018

Dee Jaspar & Associates
2730 Unicorn Rd. Bldg A
Bakersfield, CA 93308

Lab ID : VI 1840402-001
Customer ID : 4-16320

Sampled On : January 20, 2018
Sampled By : Sean Condon
Received On : January 23, 2018
Matrix : Water

Description : TW-1 Cased: 437'
Project : Allensworth CSD

General Irrigation Suitability Analysis

Test Description	Result				Graphical Results Presentation				
Cations	mg/L	Meq/L	% Meq	Lbs/AF	Good	Possible Problem	Moderate Problem	Increasing Problem	Severe Problem
Calcium	46	2.3	39	130	**				
Magnesium	18	1.5	25	49	**				
Potassium	6	0.15	3	16	**				
Sodium	44	1.9	33	120					
Anions									
Carbonate	< 10	0	0	0					
Bicarbonate	110	1.8	82	300	**				
Sulfate	7.7	0.16	7	21	**				
Chloride	7	0.2	9	19					
Nitrate	0.6	0.0097	0	2					
Nitrate Nitrogen	< 0.1			0					
Fluoride	0.7	0.037	2	2					
Minor Elements									
Boron	0.10			0.27					
Copper	0.13			0.35					
Iron	63			170					
Manganese	1.6			4.3					
Zinc	0.44			1.2					
TDS by Summation	240			650					
Other									
pH	8.8			units					
E. C.	0.229			dS/m					
SAR	1.4								
Crop Suitability									
No Amendments	Poor								
With Amendments	Good								
Amendments									
Gypsum Requirement	0.01			Tons/AF					
Sulfuric Acid (98%)	6.3			oz/1000Gal	Or 15 oz/1000Gal of urea Sulfuric Acid (15/49).				
Leaching Requirement	1.7			%					

Good Problem

Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

** Used in various calculations; mg/L = Milligrams Per Liter (ppm) meq/L = Milliequivalents Per Liter

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CA ELAP Certification No. 2810

February 2, 2018

Dee Jaspar & Associates

Lab ID : VI 1840402-001
Customer ID : 4-16320
Description : TW-1 Cased: 437'

Micro Irrigation System Plugging Hazard

Test Description	Result		Graphical Results Presentation (Slight / Moderate / Severe)
Chemical			
Manganese	1.6	mg/L	
Iron	63	mg/L	
TDS by Summation	240	mg/L	
No Amendments			
pH	8.8	units	
Alkalinity (As CaCO3)	90	mg/L	
Total Hardness	189	mg/L	
With Amendments			
Alkalinity (As CaCO3)	18	mg/L	
Total Hardness	18	mg/L	
pH	5.4 - 6.7	units	

Good Problem

Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Water Amendments Application Notes:

The Amendments recommended on the previous pages include:

Gypsum:

This should be applied at least once a year to the irrigated soil surface area. Gypsum can also be applied in smaller quantities in the irrigation water. Apply the smaller (bracketed) amount of gypsum when also applying the recommended amount of Sulfuric Acid and the larger amount when applying only Gypsum.

Sulfuric Acid:

These products should be applied as needed to prevent emitter plugging in micro irrigation systems and/or as a soil amendment to adjust soil pH to improve nutrient availability and to facilitate leaching of salts. Please exercise caution when using this material as excesses may be harmful to the system and/or the plants being irrigated. The reported Acid requirement is intended to remove approximately 80 % of the alkalinity. The final pH should range from 5.4 to 6.7. We recommend a field pH determination to confirm that the pH you designate is being achieved. This application is based upon the use of a 98% Sulfuric Acid product. The application of Urea Sulfuric Acid is based upon the use of a product that contains 15% Urea (1.89 lbs Nitrogen), 49% Sulfuric Acid and has a specific gravity of 1.52 at 68 °F.

Guidelines for the above interpretations are sourced from USDA & U.C. Cooperative Extension Service publications. Please contact us if you have any questions.

FRUIT GROWERS LABORATORY, INC.

Scott Bucy

Scott Bucy, Director of Ag. Services

SB1:EHB

Kenneth D. Schmidt & Associates, Inc.
3701 Pegasus Drive Suite 112
Suite 112
Bakersfield, CA 93308

Reported: 02/06/2018 19:57
Project: Water samples
Project Number: Allensworth CSD
Project Manager: James Angell

Metals Analysis

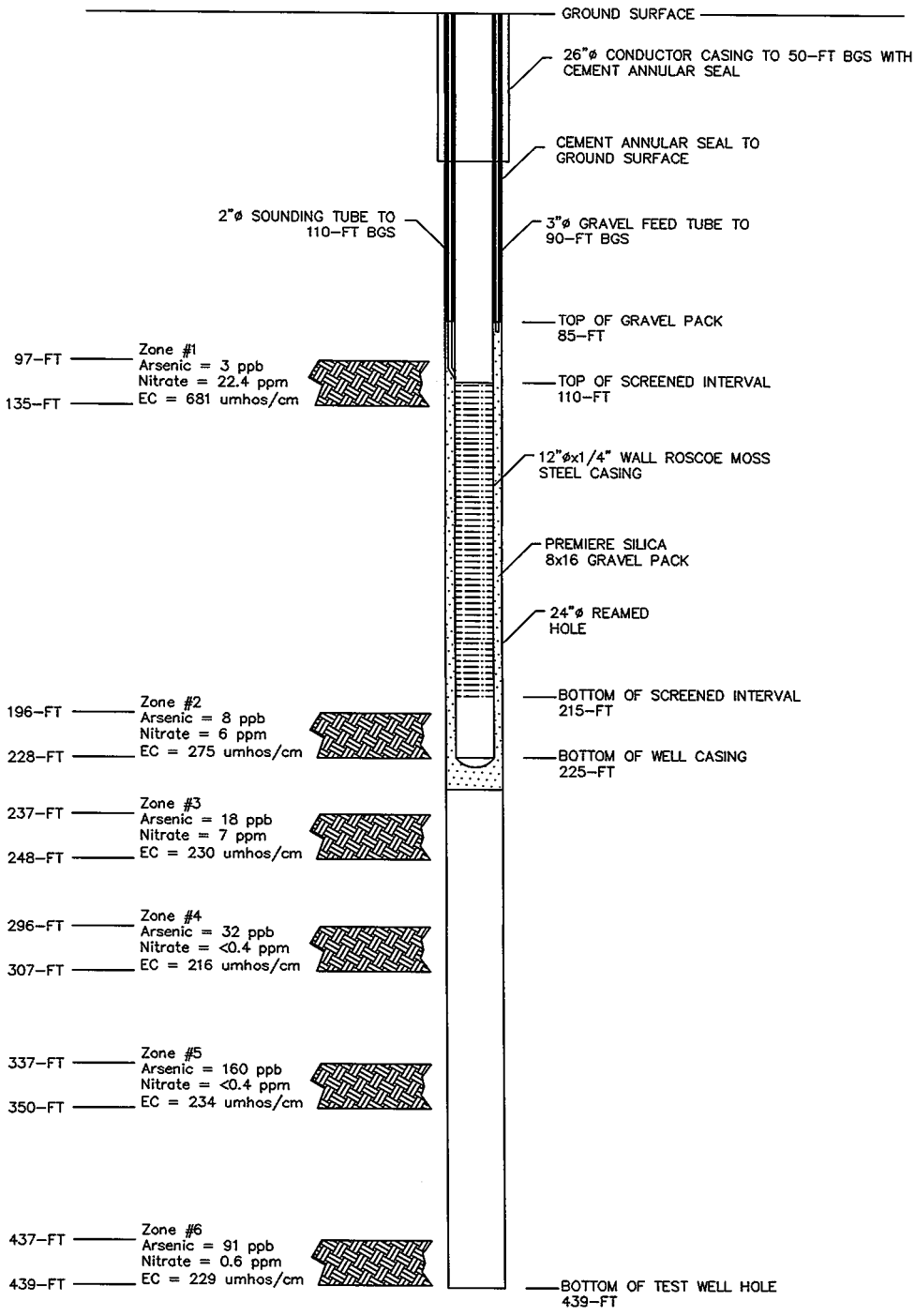
BCL Sample ID: 1802418-01 | **Client Sample Name:** TW-1 Cased:437', 1/20/2018 5:40:00PM, sean Condon

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Hexavalent Chromium	0.062	ug/L	0.20	0.031	EPA-218.6	ND	J	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-218.6	01/22/18 23:30	01/23/18 02:22	OLH	IC-4	1	B002704

APPENDIX C

TEST WELL
PROPOSED WELL DESIGN



ALLENSWORTH COMMUNITY SERVICES DISTRICT

PROPOSED WELL CONSTRUCTION DESIGN

JOB NO.	DATE FEB 16, 2018	SHEET 1

DEE JASPAR & ASSOCIATES, INC.
CIVIL • ENGINEERS
3701 PEGASUS DRIVE, SUITE 121
BAKERSFIELD, CALIFORNIA 93308
PHONE 805 393-4796
FAX 805 393-4799

APPENDIX D

TEST WELL
HYDROGEOLOGIC REPORT

DRAFT

February 2, 2018

Mr. Curtis Skaggs
Dee Jaspar and Associates
2730 Unicorn Rd, Building A
Bakersfield, CA 93308-6843

Re: Allensworth CSD TW

Dear Curtis:

During January 9-20, 2018, Cascade Drilling Co., Inc. completed a test well by the casing hammer method to a depth of 439 feet. The test well is located about 575 feet east of ACSD Well No. 1. We logged the drill cuttings and a geologic log is attached. The deposits were brown or gray to a depth of 377 feet, and gray or black from 377 to 439 feet in depth. The Corcoran Clay was penetrated between 377 and 437 feet in depth. Below a depth of 150 feet and above a depth of 305 feet, clay layers were present in the following depth intervals:

150 to 160 feet	263 to 265 feet
228 to 230 feet	280 to 302 feet.
248 to 257 feet	

Water samples were collected by pumping from six different depth intervals below a depth of 95 feet for analyses of selected constituents. FGL Environmental of Santa Paula analyzed the samples for inorganic chemical constituents (except for hexavalent chromium) and radiological constituents. BC Laboratories, Inc. of Bakersfield analyzed the samples for hexavalent chromium. APPL, Inc. of Clovis analyzed the samples for DBCP, EDB, and 1,2,3-TCP. Depth to water increased with increasing depth, and ranged from about 63 to 195 feet at the time of drilling. The depth to water was less than 75 feet above a depth of 250 feet.

TDS concentrations ranged from 150 to 460 mg/l and were less than 220 mg/l in samples from below a depth of 195 feet and

above the Corcoran Clay. Nitrate concentrations ranged from 0.6 to 22 mg/l, below the MCL of 45 mg/l, and decreased with increasing depth. Nitrate concentrations were less than 6 mg/l in all of the samples from below a depth of 195 feet. Iron and manganese concentrations in all of the samples were less than the respective recommended MCLs of 0.3 mg/l and 0.05 mg/l. Arsenic concentrations ranged from 3 to 8 ppb, less than the MCL of 10 ppb, in samples from above a depth of 203 feet. Arsenic concentrations ranged from 18 to 160 ppb in samples from below a depth of 230 feet. Hexavalent chromium concentrations in the samples ranged from about 3 to 5 ppb, less than the proposed MCL of 10 ppb. Alpha activities ranged from 3 to 11 picocuries per liter, below the MCL of 15 picocuries per liter. DBCP, EDB, and 1,2,3-TCP concentrations were non-detectable in all of the samples.

A new well can be constructed at the site. Blank casing would be installed from the surface to a depth of 110 feet and from 225 to 230 feet in depth. Perforated casing would extend from 110 to 225 feet in depth. Gravel would be placed from 230 feet up to 85 feet in depth. A gravel feed tube should be placed from 90 feet in depth to the surface. An annular seal should be placed from 85 feet in depth to the surface. Sieve analyses by the Roscoe Moss Co. indicate that a slot size of 0.06 inch and gravel gradation of 8x16 can be used.

Such a well would tap about 60 feet of sand and gravel. A properly constructed and developed well should produce at least about 800 gpm.

Please call me if you have any questions.

Sincerely Yours,

Kenneth D. Schmidt

KDS/td

GEOLOGIC LOG FOR ALLENSWORTH CSD
TEST WELL NO. 1
(T24S/R24E-13B)

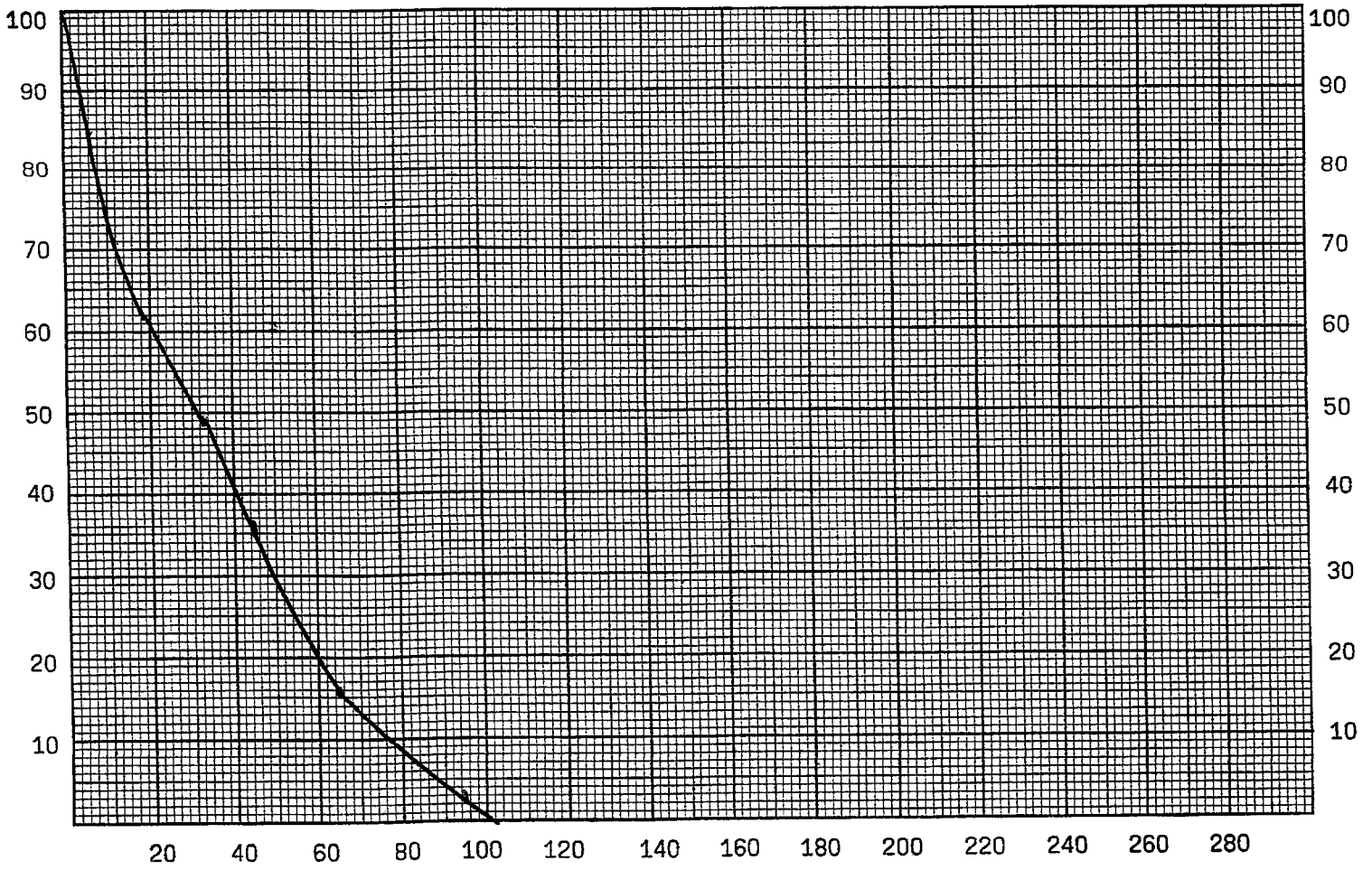
Depth (feet)	Description
0-60	Brown silty and clay
60-70	Brown medium sand with gravel
70-80	Brown clay and gravel with coarse sand
80-135	Brown gravel with coarse sand
135-136	Brown clay
136-150	Brown gravel with coarse sand
150-160	Brown clay
160-205	Brown clay with some coarse sand and gravel
205-210	Brown fine sand
210-220	Brown coarse sand and gravel
220-228	Brown coarse sand
228-230	Brown clay
230-248	Brown fine sand
248-257	Brown clay
257-263	Gray-brown coarse sand and gravel
263-265	Gray-brown clay
265-276	Gray-brown clayey fine to coarse sand with gravel
276-280	Gray-brown clay with some coarse sand and gravel
280-302	Gray-brown clay
302-310	Gray clay
310-320	Gray fine to coarse sand with gravel
320-325	Gray medium to coarse sand with gravel
325-327	Gray clay
327-340	Dark gray fine to medium sand with clay
340-352	Dark purple-gray clay with fine to medium sand
352-360	Purple-gray clay
360-376	Brown-gray clay
376-377	Brown-gray clay with coarse sand
377-400	Gray clay (Corcoran Clay)
400-437	Black clay (Corcoran Clay)
437-439	Sand

ROSCOE MOSS MANUFACTURING COMPANY

SAN JOAQUIN VALLEY DIVISION
ROUTE 1, BOX 52, MCFARLAND, CALIF. 93250

(800) 827-1981

PHONE
BAKERSFIELD (661) 393-5756
FAX (661) 393-1824



(VERTICAL #'S REPRESENT PERCENT RETAINED)
(HORIZONTAL #'S REPRESENT SIEVE OPENINGS)

SIEVE OPENINGS	CUMULATIVE PERCENT RETAINED WT W/BKR	WT.	%
0.187			
0.132			
0.0937		10	03
0.0661		42	11
0.0469		91	36
0.0331		125	49
0.0197		158	62
0.0117		180	71
0.0059		213	84
PAN		251	100
BKR. WT.			

NOTES: Ken Schmidt & Assoc
Allensworth
TW-1

SLOT OPENING RECOMMENDED _____

170

RECOMMENDED SCREEN : DIA. _____
_____ IN. LENGTH _____ FT

DATE 2/6/18

BY: _____

APPENDIX E

TEST WELL
COMPLETION & DESTRUCTION REPORT

*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

File Original with DWR

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. e0362977

Page 1 of 1

Owner's Well Number Test Well

Date Work Began 01/09/2018 Date Work Ended 1/20/2018

Local Permit Agency Tulare County Health & Human Services Agency

Permit Number WELL1701219 Permit Date 12/22/17

DWR Use Only – Do Not Fill In

State Well Number/Site Number

N Latitude W Longitude

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify

Drilling Method Air Rotary Drilling Fluid

Depth from Surface Feet	to Feet	Description Describe material, grain size, color, etc
		See attached.

Total Depth of Boring 438 Feet

Total Depth of Completed Well 438 Feet

Well Owner

Name Isolde Daphen Zihn

Mailing Address 2500 Riviera Street

City Reno State NV Zip 89509

Well Location

Address 2.5 miles EO Hwy 43 & Rd. 108 (NW Parcel)

City Allensworth County Tulare

Latitude ___ ___ ___ N Longitude ___ ___ ___ W
Deg. Min. Sec. Deg. Min. Sec.

Datum ___ Dec- Lat. 35.84826781 Dec- Long. -119.3303494

APN Book 333 Page 252 Parcel 020

Township 24S Range 24E Section 13

Location Sketch

(Sketch must be drawn by hand after form is printed.)

North

West East

South

Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. Please be accurate and complete.

Activity

◉ New Well
○ Modification/Repair
○ Deepen
○ Other
○ Destroy
Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

○ Water Supply
☐ Domestic ☐ Public
☐ Irrigation ☐ Industrial
○ Cathodic Protection
○ Dewatering
○ Heat Exchange
○ Injection
○ Monitoring
○ Remediation
○ Sparging
◉ Test Well
○ Vapor Extraction
○ Other

Water Level and Yield of Completed Well

Depth to first water 97 (Feet below surface)

Depth to Static Water Level ___ (Feet) Date Measured ___

Estimated Yield * ___ (GPM) Test Type ___

Test Length ___ (Hours) Total Drawdown ___ (Feet)

*May not be representative of a well's long term yield.

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size If Any (Inches)
0	437	9	Blank	Low Carbon Steel	.25	8.625		

Annular Material

Depth from Surface Feet	to Feet	Fill	Description

Attachments

☑ Geologic Log
☐ Well Construction Diagram
☐ Geophysical Log(s)
☐ Soil/Water Chemical Analyses
☑ Other Site Map

Attach additional information, if it exists.

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name Cascade Drilling, LP
Person, Firm or Corporation

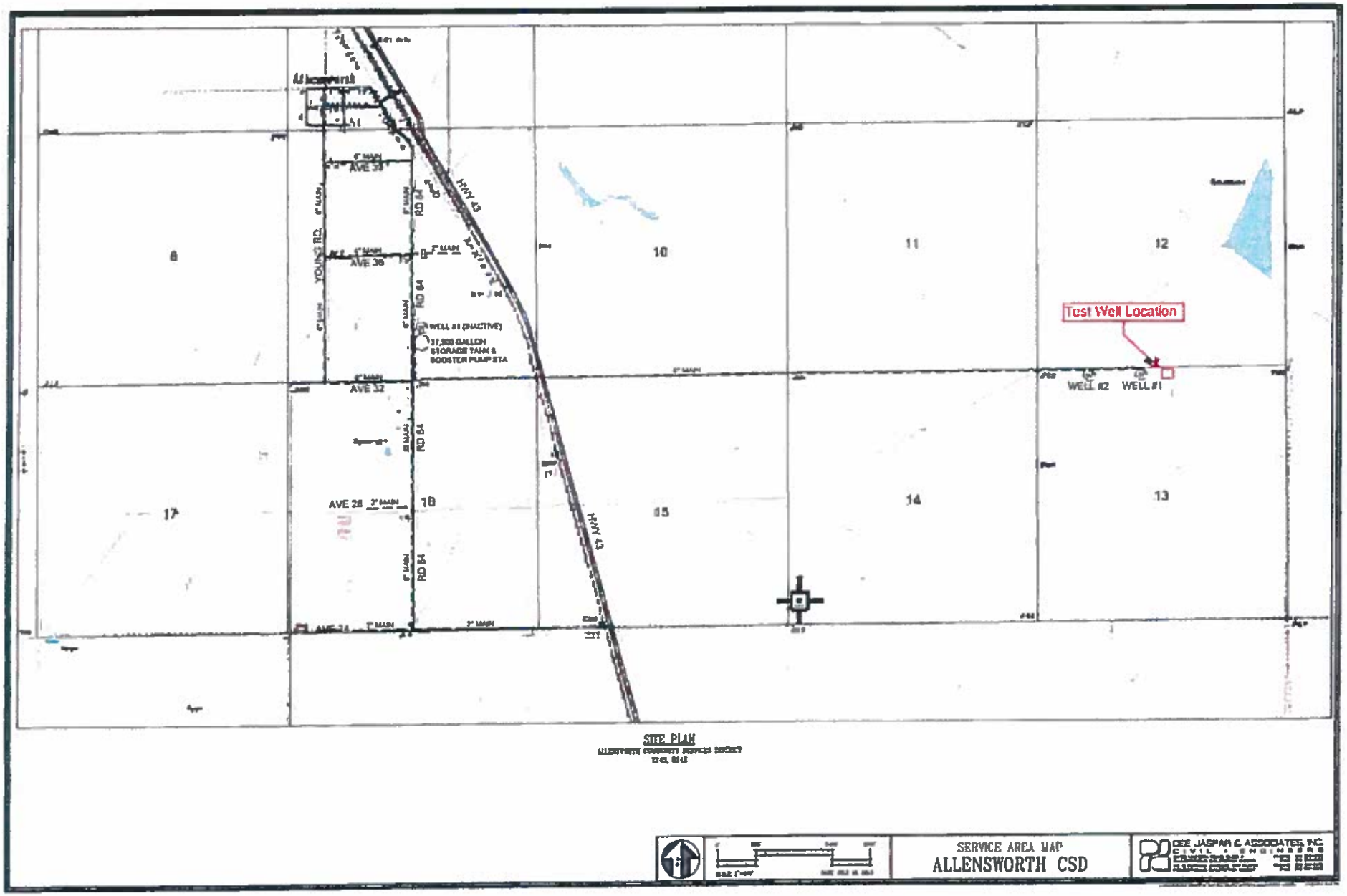
1333 W 9th Street Upland CA 91786
Address City State Zip

Signed Nikki Le FOR CASCADE DRILLING, LP 2/14/18 938110
C-57 Licensed Water Well Contractor Date Signed C-57 License Number

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

112-17-1212 Allensworth



SITE PLAN

SERVICE AREA MAP
ALLENSWORTH CSD

DEE JASPAR & ASSOCIATES INC.
CIVIL ENGINEERS

*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

File Original with DWR

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. e0362975

Page 1 of 1

Owner's Well Number Test Well

Date Work Began 01/29/2018 Date Work Ended 1/29/2018

Local Permit Agency Tulare County Health & Human Services Agency

Permit Number WELL1701220 Permit Date 12/22/17

DWR Use Only – Do Not Fill In

State Well Number/Site Number

N W

Latitude Longitude

APN/TRS/Other

Geologic Log

Orientation ○ Vertical ○ Horizontal ○ Angle Specify

Drilling Method Drilling Fluid

Depth from Surface Feet	to Feet	Description (Describe material, grain size, color, etc)
		WELL DESTRUCTION
		Removing casing and backfill from 433' to 5'
		with sand cement slurry, from 5' to 4' with concrete
		and from 4' to 0' with native soil.

Total Depth of Boring Feet

Total Depth of Completed Well Feet

Well Owner

Name Isolde Daphen Zihn

Mailing Address 2500 Riviera Street

City Reno State NV Zip 89509

Well Location

Address 2.5 miles EO Hwy 43 & Rd. 108 (NW Parcel)

City Allensworth County Tulare

Latitude Deg. Min. Sec. N Longitude Deg. Min. Sec. W

Datum Dec- Lat. 35.84826781 Dec- Long. -119.3303494

APN Book 333 Page 250 Parcel 020

Township 24S Range 24E Section 13

Location Sketch

(Sketch must be drawn by hand after form is printed.)

North

West East

South

Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. Please be accurate and complete.

Activity

○ New Well
○ Modification/Repair
○ Deepen
○ Other
◉ Destroy
Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

○ Water Supply
☐ Domestic ☐ Public
☐ Irrigation ☐ Industrial
○ Cathodic Protection
○ Dewatering
○ Heat Exchange
○ Injection
○ Monitoring
○ Remediation
○ Sparging
◉ Test Well
○ Vapor Extraction
○ Other

Water Level and Yield of Completed Well

Depth to first water (Feet below surface)

Depth to Static Water Level (Feet) Date Measured

Estimated Yield * (GPM) Test Type

Test Length (Hours) Total Drawdown (Feet)

*May not be representative of a well's long term yield.

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size If Any (Inches)

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	4	Native Soil	
4	5	Concrete	
5	433	Sand Cement	Slurry

Attachments

☐ Geologic Log
☐ Well Construction Diagram
☐ Geophysical Log(s)
☐ Soil/Water Chemical Analyses
☑ Other Photos/Site Map

Attach additional information, if it exists.

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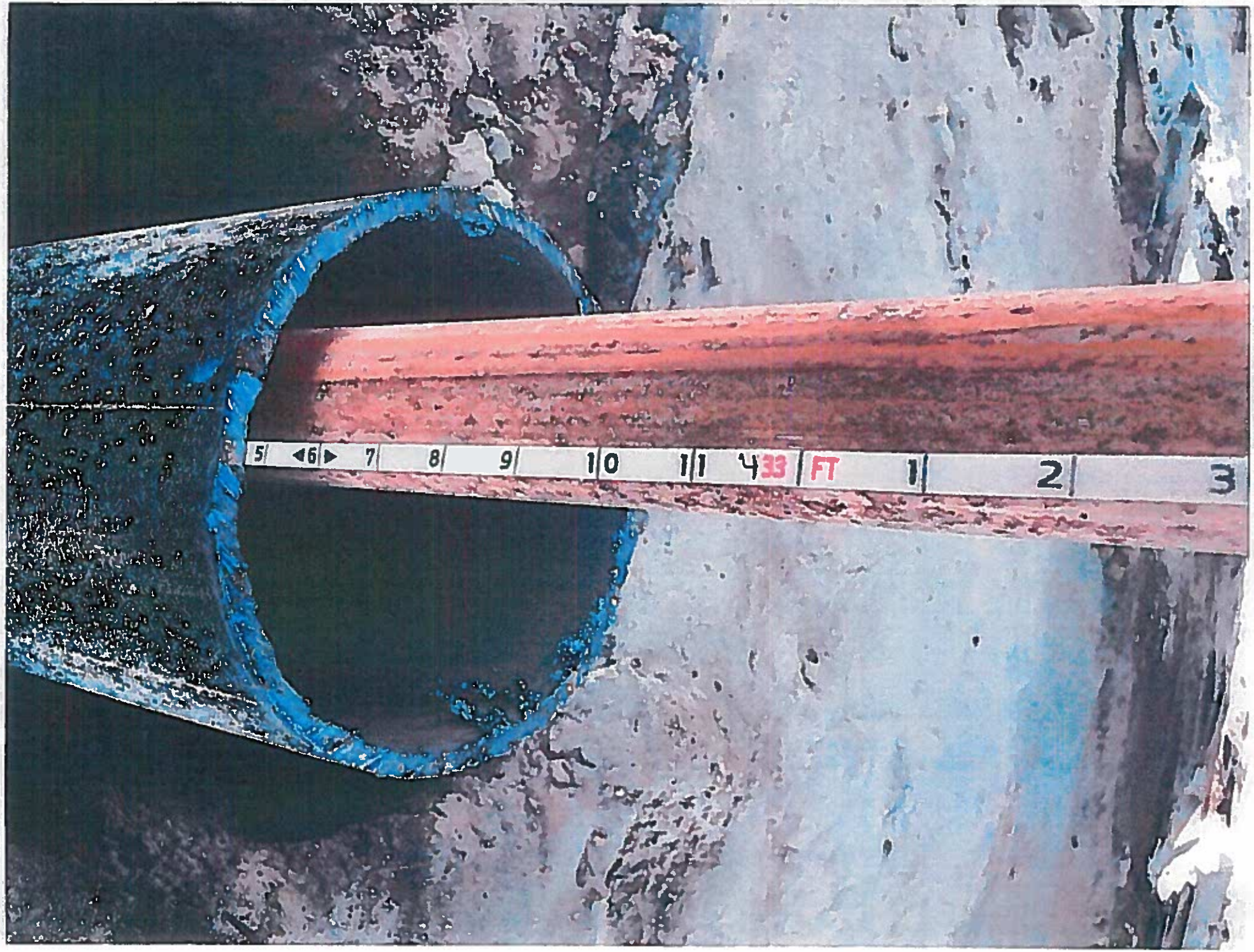
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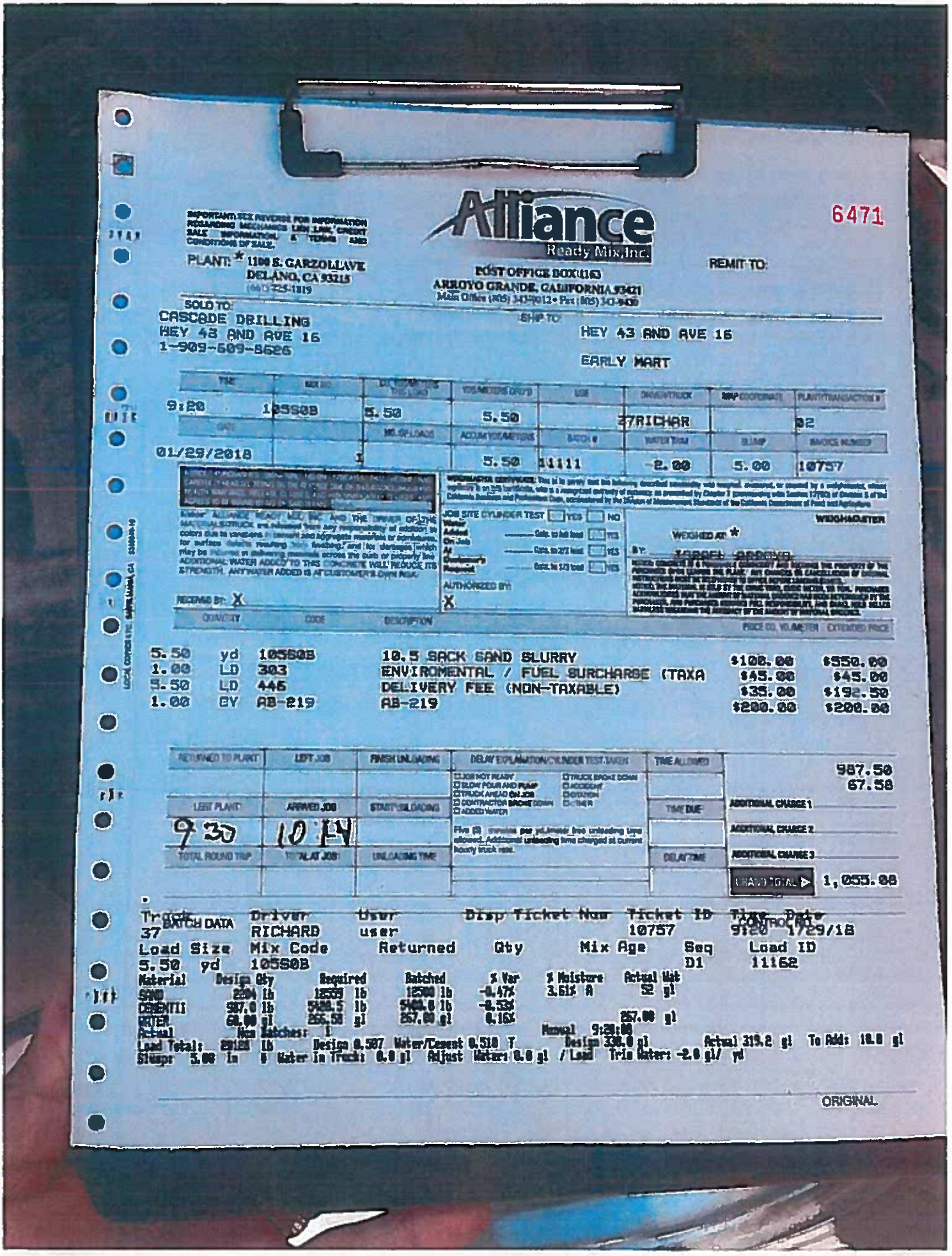


Alliance Ready Mix, Inc.

6471

PLANT: * 1100 S. GARZOLLI AVE
DELANO, CA 93215

POST OFFICE BOX 1163
ARROYO GRANDE, CALIFORNIA 93421

REMIT TO:

SOLD TO:
CASCADE DRILLING
HWY 43 AND AVE 16
1-909-509-8626

SHIP TO:
HWY 43 AND AVE 16
EARLY MART

TIME	MIX NO.	YDS. THIS LOAD	YDS. METERS DRVD	USE	DRIVER/TRUCK	MAP COORDINATE	PLANT/TRANSACTION #
9:20	105S0B	5.50	5.50		37RICHAR		92
DATE		NO. OF LOADS	ACCUM YDS. METERS	BATCH #	WATER TRIM	SLUMP	INVOICE NUMBER
01/29/2018	1		5.50	11111	-2.00	5.00	10757

WEIGHMASTER CERTIFICATE: This is to certify that the following described vehicle(s) was weighed, witnessed, or caused by a weighmaster, either registered with or licensed by the State, who is a competent authority of reciprocity, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

WEIGHMASTER

WEIGHED AT: *

BY: [illegible]

Seller ALLIANCE READY MIX, INC. AND THE DRIVER OF THE MATERIAL/S TRUCK are released from any responsibility or objection as to colors due to variations in cement and aggregate materials or discoloration, or surface defects resulting from finishing, and for alterations which may be required in delivering materials across the curb or gutter(s) line. ADDITIONAL WATER ADDED TO THIS CONCRETE WILL REDUCE ITS STRENGTH. ANY WATER ADDED IS AT CUSTOMER'S OWN RISK.

JOB SITE CYLINDER TEST: YES NO

Water Added On Job At Customer's Request: ____ Gals. to full load YES; ____ Gals. to 2/3 load YES; ____ Gals. to 1/3 load YES

AUTHORIZED BY:

RECEIVED BY: X

X

QUANTITY	CODE	DESCRIPTION	PRICE PER YD./METER	EXTENDED PRICE
5.50	yd	105S0B	10.5 SACK SAND SLURRY	$100.00	$550.00
1.00	LD	303	ENVIROMENTAL / FUEL SURCHARGE (TAXA	$45.00	$45.00
5.50	LD	445	DELIVERY FEE (NON-TAXABLE)	$35.00	$192.50
1.00	EA	AB-219	AB-219	$200.00	$200.00

RETURNED TO PLANT	LEFT JOB	FINISH UNLOADING	DELAY EXPLANATION/CYLINDER TEST TAKEN	TIME ALLOWED	
			☐ JOB NOT READY ☐ TRUCK BROKE DOWN ☐ SLOW POUR AND PUMP ☐ ACCIDENT ☐ TRUCK AHEAD ON JOB ☐ DIVERTED ☐ CONTRACTOR BROKE DOWN ☐ OTHER ☐ ADDED WATER		987.50
LEFT PLANT	ARRIVED JOB	START UNLOADING		TIME DUE	67.58 ADDITIONAL CHARGE 1
9 30	10 14		Five (5) minutes per yd./meter free unloading time allowed. Additional unloading time charged at current hourly truck rate.		ADDITIONAL CHARGE 2
TOTAL ROUND TRIP	TOTAL AT JOB	UNLOADING TIME		DELAY TIME	ADDITIONAL CHARGE 3
					GRAND TOTAL ▶ 1,055.00

Truck 37 BATCH DATA | Driver RICHARD | User user | Disp Ticket Num | Ticket ID 10757 | Time Date 9:20 1/29/18

Load Size	Mix Code	Returned	Qty	Mix Age	Seq	Load ID
5.50 yd	105S0B				D1	11162

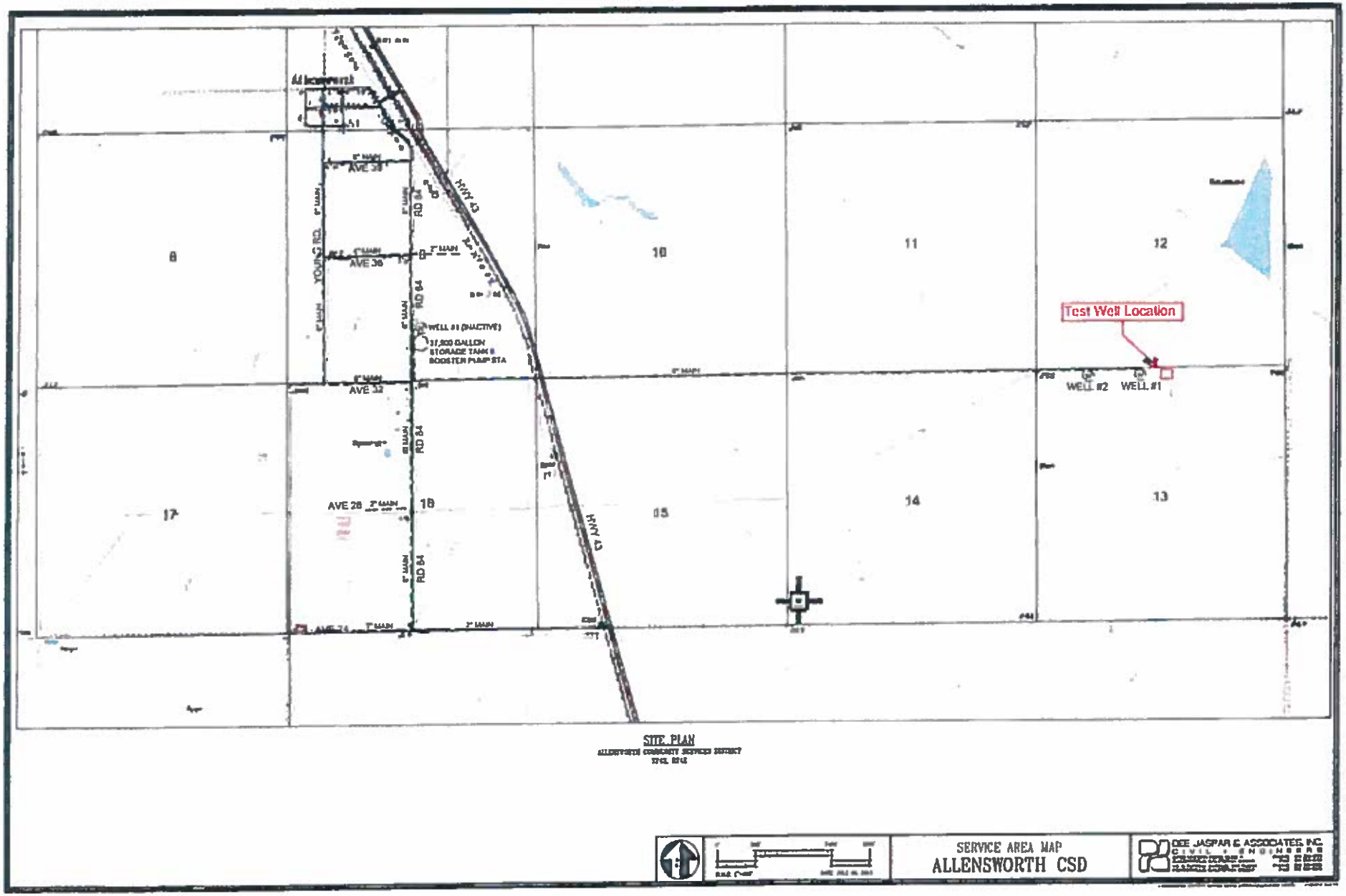
Material	Design Qty	Required	Batched	% Var	% Moisture	Actual Wat
SAND	2394 lb	12569 lb	12500 lb	-0.47%	3.61% A	52 gl
CEMENT II	987.0 lb	5426.5 lb	5400.0 lb	-0.53%		
WATER	60.00 gl	255.50 gl	257.00 gl	0.16%		257.00 gl

Actual Num Batches: 1 Manual 9:20:00

Load Total: 20126 lb Design 0.507 Water/Cement 0.510 T Design 330.0 gl Actual 319.2 gl To Add: 10.8 gl

Slump: 5.00 in # Water in Truck: 0.0 gl Adjust Water: 0.0 gl / Load Trim Water: -2.0 gl/ yd

ORIGINAL



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SERVICE AREA MAP
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